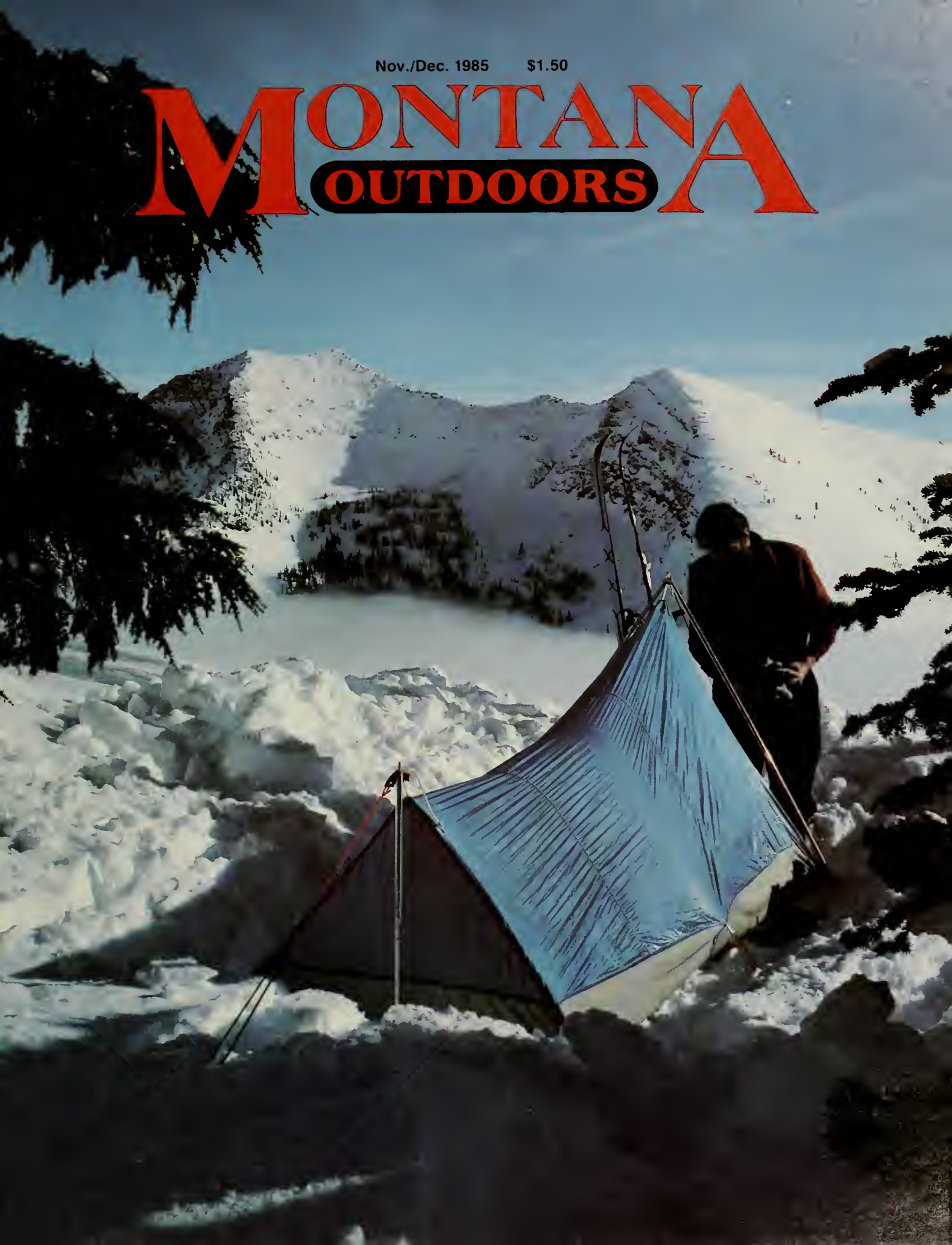


Nov./Dec. 1985

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MONTANA OUTDOORS





GARY D. HOLMES

Take a look at the outdoors
from your own window-sill perch . . .

Coming in January,
The Fifth Annual Special Photo Issue.

MONTANA OUTDOORS

Nov./Dec. 1985, Vol. 16, No. 6
(USPS 360 280)

Front Cover

Peter Kagan's striking photo of winter camping in the Cabinet Wilderness Area reminds us that Montana's winters don't have to be spent indoors.

Inside Front Cover

Gary D. Holmes' photo of a mountain goat making itself comfortable at Glacier Park's Sperry Chalet serves as an appealing reminder that the Fifth Annual Special Photo Issue is coming soon—Jan./Feb. 1986.

Back Cover

Loren Kovich's watercolor of cedar waxwings exemplifies the allure of birding, a hobby which can be enjoyed in all seasons, by all people, young or old, rich or poor.

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Somewhere across the purple-shrouded canyon a lone coyote's mournful howl rises to greet the dawn. A cow elk raises her head briefly, then resumes feeding. As she feeds, she grasps bunches of rough fescue and bluebunch wheatgrass with her tongue, pulls them into her mouth, and breaks them off. She chews the plants very little before swallowing; since she must eat about 18 pounds of dry forage each day, she can't be too choosy. Moving slowly across the south-facing grassy slope, she eats quickly until she gets her fill. As the sun clears the eastern horizon, flooding the grassy foothills with light, the cow moves with the herd into a patch of Douglas-fir trees to bed down.

Such feeding behavior is common for elk. Although the distant coyote poses no problem, elk have long been subject to predation by bears, wolves, and cougars. Thus, they have evolved a strategy of eating large amounts of forage in a short time, then bedding down in cover to chew and digest it.

The elk's digestive process, which employs a four-chambered stomach, is a marvel of efficiency. Digestion begins in the elk's mouth, as saliva lubricates the forage, helping it slide more easily down the esophagus into the rumen—the first and largest of the four stomach compartments. Since the rumen has a small exit hole, the plant material cannot pass into other parts of the digestive tract until it has the consistency of a slurry. Once the elk is bedded, it begins to "ruminate," or regurgitate and chew a soft mass of this plant material called a "cud." Each cud is chewed for about a minute, then swallowed. Regurgitation and chewing of the food in the rumen may take eight hours or more daily.

The rumen is very large—when full, its contents comprise up to 23% of the total weight of the elk. This weight, of course, includes the rumen fluid, each milliliter of which contains an estimated 11 to 67 billion plant-digesting bacteria. These bacteria attack the plant mass, converting proteins and other sources of nitrogen to ammonia, then to amino acids. Fats, sugars, starches, cellulose, and hemicellulose in the forage are digested by the bacteria to produce fatty acids, which are then used by the elk to form

ODDYSEE OF AN ELK

by Earl Willard

illustrated by
Robert Neaves

fat. Bacteria even produce many vitamins needed by the elk, especially B-complex vitamins. Without these bacteria, elk would not be able to digest sufficient amounts of forage to live. If anything adversely affects the bacteria, an elk can be full of forage and still starve.

After about a day, the partially digested plant material in the rumen moves into the reticulum (a small blind sac), then to the omasum, where food is ground and water is squeezed out. Next it enters the abomasum, the true stomach, where powerful enzymes begin to work. Food then passes to the intestines, where further digestion takes place. Complete digestion of succulent forage in early spring requires around three days, whereas digestion of coarser plants later in the summer may take five or six days.

As the sun nears the tops of the mountains to the west, our cow elk becomes restless. She has been bedded much of the day, chewing and digesting, although she periodically

tested the air currents for danger, sometimes standing for short periods. Now the elk around her begin to rise, stretch, and look around. Seeing nothing that appears threatening, they move out of the timber and head downslope toward a willow-rimmed creek.

The cow remains alert as she approaches the creek, checking the brush and tall grass for signs of danger. Reassured, she walks into the icy water newly melted from the winter snows, and takes in deep drafts of the life-sustaining fluid. During hot weather, she will consume three to eight times as much water as dry plant material.

Thirst slaked, the elk scatter across the grassy slopes. The cow moves among them, eating more rough fescue, Junegrass, western yarrow, and lupine as she goes. She grazes until she's full, her long shadow trailing behind her as she moves. A cool breeze sifts down from the high country, casting a chill over the lower, darkening slopes. The cow moves back into the timber to bed with the herd. There, as before, she ruminates, her body continuously digesting plants and soaking up nutrients. Day after day during early spring, the cow follows a similar routine. She feeds for a few hours daily, ruminates up to eight hours while resting, and digests 24 hours a day.

The fat, mineral, and vitamin reserves depleted during the long, hard winter are being replaced. Fats digested yesterday are now deposited under the skin for insulation and around the viscera and other organs for support in the body cavity. Some fat is being used for daily energy needs; other fat enters into chemical reactions required to sustain life. Proteins reformed from amino acids are repairing muscles, growing hair and hooves, and becoming incorporated into nerves, skin, connective tissue, and vital organs. Even the bones receive some of the protein, since protein provides the cellular structure within which the calcium, phosphorus, and other minerals are deposited.

But the cow is not alone in receiving nourishment from the forage she eats. A soon-to-be-born calf rests within her. Protected inside a sack of water, the fetus depends completely on the cow to supply it with nutrients for growth and development. The water



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she drank yesterday and a week ago and last month is reacting with starch to form blood sugar, helping to maintain normal body temperature, transporting nutrients and body wastes, giving the body form and rigidity, and lubricating the skeletal joints of the cow and fetus. In fact, about 75% of the body of the cow is water; that of the calf even greater. So the cow feeds and digests and prepares for giving birth. As the fetus grows larger, it places more demands on the cow. These demands for nutrients will be even greater as soon as it is born.

One morning in early June, the cow elk rises from her bed in an aspen patch and looks around. A newborn calf moves to her side. It nuzzles the swollen udder and begins to nurse. Parts of the succulent grasses, forbs, and shrubs eaten by the cow five days ago now flow freely from her body to the mouth of the calf via the milk. The life-giving liquid flows down the esophagus, past the diminutive rumen, and through the other compartments to the abomasum. It is here in the true stomach and the intestines that milk is digested. In fact, the calf elk will digest more than 97% of the milk.

The milk the calf is getting from the cow meets all of its nutrient requirements. Approximately 81% water, the elk milk also contains about 6.7% fat, 5.7% protein, 4.2% sugar, 1.3% minerals, and trace amounts of needed vitamins. Until the calf begins to forage, the cow must eat enough for both of them.

Through the rest of spring and summer, the cow and calf follow the herd as it searches for greener pastures. They follow the wave of high-quality forage as it shifts from southern slopes to northern slopes, drier sites to wetter sites, sunny sites to shady sites, and lower elevations to higher elevations.

The elk calf begins to eat small amounts of plant material within two weeks of its birth. The plants stop in the small rumen, where bacteria introduced from the outside world begin the digestive process. The calf continues to drink milk, but increasingly supplements this with forage. Thus, the rumen becomes active and enlarges as the calf increases its grazing activity.

On a warm summer morning the herd moves slowly across the high meadow, eating bluegrasses and sedges as they go. The cow stops to tear off a few bites of Kentucky bluegrass, takes a step to nip the sweet-smelling flowers from a beargrass plant, then moves a few yards to some low-growing willows where she removes leaves and twig tips in large mouthfuls. She circles the wet meadow, finding all the succulent plants needed to fill her rumen. As the sun rises in the clear sky, the cow and her frolicking calf move with the herd to the shade of some nearby lodgepole pines and bed down for the day. All around them other creatures of the high country are actively storing food: black bears are after huckleberries, pine squirrels are caching cones, and picas are harvesting grasses and sedges to add to their haystacks among the boulders. Yes, it is a time of plenty, a feast laid out across the landscape.

Through early August, the cow-calf herd has not mixed much with the mature bulls. The bulls have generally remained in more remote areas. However, as late August and early September arrives in the high country, a change takes place in the elk. The breeding season, or rut, has arrived. Bulls gradually begin to take interest in the cows, and the mature, dominant bulls begin gathering harems of cows for breeding.

The cow elk is part of the harem of a heavy-antlered, six-point bull. Since lesser bulls remain nearby, the herd bull is constantly on the alert, chasing away first one, then another. He circles the feeding cows, always alert to other bulls. Thus, the herd bull that grew fat before the rut now feeds little—instead, he loses weight. While the bull is expending large amounts of energy, the cow and calf continue to feed and gain weight.

It is now the 13th of September. The cow elk is in estrus and receptive to be bred. Next year's calf will be born around the first of June when the cow will once again have high-quality forage from which to make milk. Had the cow not conceived in this first estrus cycle, conception during the next cycle almost a month later would have delayed the birth of the calf until early July. By this date, the forage quality has declined. The nursing calf would have had poorer nutrition with which to begin life, and would, in fact,

have had difficulty surviving the winter. The delayed weaning date would have left the cow in poorer winter condition also.

he first frost of fall forms a white carpet over the upper parks. As the cow elk moves out of the timber to graze in the early dawn, she finds that the frosted forage in the wet meadows is no longer palatable. The herd continues on through the meadows, searching for drier sites. They wander through an open, mature lodgepole pine stand, finding it more to their liking. The cow eats elk sedge, asters, and willows as she travels. The herd eventually moves out of the trees onto a dry, south-facing slope. Here, the bunchgrasses are mature: seeds have ripened and fallen to the ground, while the dry stems and leaves remain intact. The cow grazes the stems and leaves from rough fescue, bluebunch wheatgrass, and Idaho fescue, filling her rumen in a short time. Although grasses are marginal in meeting an elk's nutritional requirements in late September and October, the rumen bacteria are able to digest plenty of fatty acids out of the cellulose and hemicellulose of the cell walls, so the cow continues to fatten.

When the hunting season begins, the elk move back into dense cover, and remain there during daylight hours. They graze forest openings at dusk, at night, and at dawn. The cow still consumes bunchgrass and any small forbs that have greened up on the fall rains, but she also spends more time browsing on shrubs. Shrub leaves and twigs are alive and therefore more nutritious than the dead stems and leaves of grasses.

One morning late in the hunting season the first snowstorm hits the high country with a fury. The elk herd remains bedded in a dense old-growth Douglas-fir stand on a ridge. They wait out the storm. Two days later the snow continues to fall, until an accumulation of up to 15 inches covers the landscape. It is time to migrate to the lower winter range, where forage is more available and snow is not as deep.

The herd moves across ridge after ridge, slowly working its way downward. The cow grazes occasional-

ly on elk sedge, tree lichens, and serviceberry as she moves. Mostly, however, she is on the move, ever alert for danger. The elk eventually arrive on the upper portion of the winter range, where they settle into a dense lodgepole pine stand to bed and feed until the hunting season ends.

As winter intensifies, the cow and her calf join a large herd gathered on the winter range. Daily energy needs have to be met from the forage she eats or from body reserves. If her body fat is depleted, she must obtain energy by breaking down body protein, mostly muscle. She will then weaken quickly.

Energy conservation is critical to the cow during winter. In cold weather, she remains bedded in dense, mature timber, out of the chilling wind. Also, she has less heat loss since she isn't directly exposed to the cold winter sky. Her dense winter coat and the thick layer of fat under her skin are good insulation. When the cow beds close to a large tree trunk, she gets heat radiated from water stored in the trunk. This water contains large amounts of heat; as the water cools, heat is radiated from the tree into the surrounding air.

She also feeds more during the day, to take advantage of the warming sun. As she moves across the grassy flats, she eats mostly rough fescue, bluebunch wheatgrass, and Idaho fescue; at times, she stops to break twigs from serviceberry and snowberry bushes. She eats a well-balanced diet: grasses, especially rough fescue, are rich in energy, and the live woody plants supply other nutrients. As long as the range is not overgrazed and a variety of forage plants is available, the cow's nutritional needs can be met.

Usually around mid-morning, the cow moves from the grasslands into the timber to bed down. She has consumed less forage than she did during summer, since she now needs only 12 to 14 pounds of dry forage to fill her rumen. Since the forage is more fibrous in winter, it is not digested as quickly. Thus, less of it moves out of the digestive tract daily to make room for more. Her metabolism is also reduced, so that the need for nutrients is lessened.

As she remains bedded in the thermal cover provided by the trees, the cow is conserving her energy. If she were to stand, she would use 15% to 25% more energy. Feeding and walking would require even more. If people or dogs were to enter the area, she would expend considerable energy trotting and running to escape them. But they don't invade her sanctuary, and she remains sedentary.

The calf bedded nearby isn't as energy-efficient as the cow. Its metabolic rate is much higher, and it does not conserve body heat as well, since it has a larger body surface area in relation to its size.

Snow is especially deep this winter. It not only covers forage, but makes travel difficult. The calf is hampered more by the deep snow than the cow. In fact, the calf uses about five times as much energy to travel through the deep snow as it would need for snow-free travel.

As winter wears on, the sun warms the snow, melting it sufficiently to form a two-inch crust on the surface. The crust is above the knees of the cow, so that movement is difficult and requires considerable energy. The shorter-legged calf is unable to move through the crusted snow, so the cow and calf remain among the large, dense trees. Since the snow is not as deep here, the animals feed at times under the tree canopy. They pull tree lichens from the lower branches and browse on Douglas-fir branches. These forages, along with limited amounts of Oregon grape and snowberry, will be their food until winter breaks.

The March day begins like those that have moved across the landscape since late November: cloudy, cold, and snowy. However, as the bedded elk lie quietly in their dense cover, a change is in the air. Winter is breaking! At first, a warm breeze invades the winter range, moving the cold air out of the valley. Then the clouds sweep away. Chinook winds have come! The cow rises and stretches. It is too soon to move out into the snow to feed; she will wait for the chinook to reduce the snow. The calf at her side has lost considerable weight during the harsh winter; its coat is

rough and its hip bones stick out, but it has survived the winter. The cow and calf have lost 25% to 30% of the weight they carried in late fall—about the maximum they could lose without suffering nutritional problems. Now it is time to replenish the shrunken reserves.

Early spring is upon the land. Birds sing, creeks again flow freely, and sagebrush buttercups spread a yellow carpet across the lower grasslands. The cow and calf move slowly across the open slopes, feeding on the green sprigs of grass that have pushed their way through last year's dead grass stems and leaves. Kentucky bluegrass, Idaho fescue, Junegrass, and early spring forbs are added to the mass building up in the rumen. Green forage at last! Vitamins and minerals and protein are digested and quickly absorbed.

This new, succulent forage is also high in water, perhaps containing as much as 85% to 95%. If the cow ate only this succulent material, she would get mostly water from the feed and not derive enough nutrients. However, plenty of old plant material remains from last year, providing the necessary energy and a balanced diet.

Since November, the calf has been nutritionally on its own. It has learned to make a living while it moved at the cow's side. The cow, on the other hand, is once again eating enough for two: herself and the unborn calf within her.

The cow and calf remain on the winter range through April and May. Their ribs no longer show, as they feed and ruminate and digest and absorb nutrients. The cow grows large, and soon a new calf will appear at her side.

Rain clouds move out of the high country and settle into the lower foothills. Droplets of life-supporting water begin to sprinkle the landscape, bouncing off leaves and rocks before eventually soaking into the soil. The intensity increases to a downpour. The cow moves back into the timber to bed down. As the shower passes, golden sunlight floods the valley. Raindrops that cling to leaves burst into a brilliance of light, each a diamond on its own precarious perch. As the cow rests, the sunlight and water and green leaves build nutrients to add to the annual supply. Soon, she will again harvest these life-supporting nutrients. Life goes on. ■

The Mountain Plover:
**UNCOMMONLY
EXCEPTIONAL**

Every summer the prairies of Montana play host to one of the state's rarest breeding birds—the mountain plover. Not only is the bird itself rare in the state, but an aspect of its breeding behavior is also quite exceptional. The female lays two clutches of eggs; the male incubates the first, and the female incubates the second—in a separate nest.

What about the mountain plover's statistics? It is a medium-sized member of the plover family weighing about four ounces and measuring about nine inches long. Other members of the plover family, such as the killdeer, are boldly marked in contrasting patterns of light and dark. Less exceptional is the mountain plover's nondescript bayish-colored plumage. During the breeding season, however, its forehead wears a bright, white patch set off by a nearly black cap.

The "shorebird group" comprises plovers, along with avocets, curlews, godwits, phalaropes, snipes, sandpipers, and others. They have adapted to a wide variety of wetland habitats,



by Craig Knowles
illustrated by Karen Ray Brower

ranging from the Arctic tundra to ocean beaches. However, once again, the mountain plover is an exception. It is one of the few North American shorebirds not associated with shores, beaches, and flooded areas during at least part of the year. Instead, it chooses dry shortgrass habitat for both its breeding and winter ranges. But like other plovers, the mountain plover is an able runner and forages on the ground.

Most birds have names that either describe them or their attributes; the mountain plover is an exception. Few are as inappropriately named as it is. It was first described in 1837, based on observation in the broad, grassy plains of the Sweetwater River in central Wyoming. To the eastern naturalist who described it, this area seemed mountainous—hence the name *mountain* plover. Since then, many people have suggested that “prairie plover” would be a more suitable appellation.

Reports on the original abundance of mountain plovers conflict. In Montana, the mountain plover was considered rare on the plains bordering the Yellowstone and Musselshell rivers; in the vicinity of the Milk River, it was reported to breed in considerable numbers. Other early records indicate this bird was abundant in eastern Colorado and western Kansas.

The mountain plover was considered a great delicacy and, around the turn of the century, it was commercially hunted on its wintering areas in California. Market hunters of the time described it as incredibly dumb before the gun; when disturbed, plovers formed large, dense flocks from which 30 to 65 could be killed with a discharge from a double-barreled shotgun.

Populations were further reduced by alteration of the plover's prairie habitat. Homesteading and the accompanying dryland agriculture, and the elimination of both the bison and fire were among the influences on the prairie habitat.

The original breeding range of the mountain plover was the shortgrass prairie of the Great Plains, from the Canadian border south to New Mexico and Texas. Today, mountain plovers still breed throughout most of their original range, but only in isolated areas. The Pawnee National Grassland in northeastern Colorado is now recognized as the stronghold, with breeding densities exceeding 50 birds

per square mile in areas of favorable habitat. In Montana, mountain plovers nest in moderate densities in isolated portions of Phillips, Blaine, Valley, and Golden Valley counties.

In Phillips and Blaine counties, mountain plovers breed in a special and restricted habitat: black-tailed prairie dog towns (mostly in the southern half of Phillips County). Mountain plovers begin arriving at these dog towns in mid-April, with courtship rituals and mating in May. The mating system of the mountain plover is as unique as the habitat it selects in which to lay its eggs. In late May and early June, the female lays a clutch of three eggs for the male to incubate; as mentioned earlier, she then lays an additional three eggs in *another* nest which she incubates. The only other North American plover with such a system is the dotterel. Presumably this system results in more young being fledged.

Mountain plover nests are shallow depressions in the soil lined with pieces of lichen, dried cattle manure, and an assortment of plant litter. Like killdeer, adult mountain plovers feign injury to distract predators from the nest site. They often nest in areas intensively grazed by cattle; they will fly at the faces of the cattle to keep them from trampling the nest sites. This behavior undoubtedly developed years ago to prevent nest destruction in areas heavily grazed by bison.

Mountain plover eggs hatch at four weeks. The young are downy and their coloration blends in with the soil and short grasses. The plover chicks leave the nest shortly after hatching and follow the adult about, learning to forage for themselves. Mountain plovers feed almost exclusively on insects, with beetles, grasshoppers, and ants forming the bulk of the diet. The young take to wing a little more than a month after they hatch. In late July and early August, plovers begin to form small flocks in preparation for migration. By the end of August, most plovers have left Montana.

Mountain plovers using prairie dog towns for breeding sites is nothing new. As early as 1860, an ornithologist recorded mountain plovers in prairie dog towns. A Montana rancher interested in birds, E.S. Cameron, reported in 1907 that mountain plovers occurred on prairie dog towns around his ranch in Dawson and Custer coun-

ties. Over the decades since this report, Montana's prairies have changed greatly. Vast tracts have been plowed up, and prairie dog populations have been reduced by intensive control efforts.

The best place to observe mountain plovers in Montana today is on the large prairie dog towns at the west end of the Charles M. Russell National Wildlife Refuge north of the Missouri River. A few years back, I conducted a study in this area and found mountain plovers in 16 of the 35 prairie dog towns I examined. I rarely found mountain plovers off prairie dog towns. A recent study by University of Montana graduate student Sally Olson found breeding densities of mountain plovers in 10 of these towns on the refuge averaged 45 birds per square mile. However, prairie dog towns in this part of the refuge occupy less than 2% of the land; thus, the total number of mountain plovers is relatively small. Mountain plovers also occur on prairie dog towns in private and public lands in Phillips County immediately north of the refuge, and on several dog towns on the Fort Belknap Indian Reservation.

Why do prairie dog towns attract mountain plovers? Throughout their range, mountain plovers inhabit areas with low-growing vegetation. In north central Montana, normal prairie vegetation may be too high for mountain plovers to successfully breed in it. Prairie dog towns in Phillips County are usually in areas intensively grazed by cattle or sheep. Prairie dogs and livestock together alter the plant species composition and keep the height of the vegetation low enough to be attractive to mountain plovers. Since it is a ground-dwelling bird, the mountain plover benefits—raptors and mammalian predators are much easier to spot when the average height of the vegetation is lower than the eye level of the mountain plovers.

In addition, prairie dogs have an elaborate alarm system that immediately and audibly announces the presence of predators. Predators of prairie dogs are predators of mountain plovers, and it is possible that mountain plovers are also alerted to danger when a prairie dog issues an alarm bark. Another possible advantage of inhabiting a prairie dog town with its short vegetation is that insects are

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In the near future, northeastern Montana's giant Fort Peck Reservoir might hold some surprises for fishermen.

Those in the know concerning the possibility of better sport fishing at Fort Peck Reservoir are expressing cautious optimism. What, you may ask, are the reasons for this brighter outlook? One reason is some water level management in the reservoir by the Corps of Engineers. Why should fishing improve? Is fishing in Fort Peck really going to turn around? Good questions, but not all that easy to answer.

Before looking at some of the reasons why sport fishing is on the upswing, let's review the reservoir's fisheries history.

Northern pike—Outstanding northern pike fishing brought Fort Peck national attention in the 1960s. However, the fishery gradually declined, primarily from lack of spawning habitat. A lack of shoreline vegetation in the spring resulted in poor natural reproduction. Although northers were planted, the population continued its downward plunge—the quantities needed to sustain sport fishing at former levels just were not available.

Walleye—During the '70s, walleyes grabbed the spotlight. Beginning about 1974, fishing for them was particularly good in the Big Dry Arm of the reservoir. By the end of the decade, the excellent fishing began to taper off. Again, poor natural reproduction was the reason for the decline. It wasn't long before the discontented fishing fraternity began its rumblings, and the Department of Fish, Wildlife and Parks stepped up efforts to improve walleye fishing by planting thousands of walleye fry and fingerlings.

Still, the fishery languished, and fishermen's pleas to do something increased. One fisherman, who had caught only one fish on a trip to Big Dry Arm, wrote: "Fishing is very poor, hope this is not the last one. If it is, would appreciate it if you turn another one loose! The ratio of water to fish seems inordinately high."

Another serious problem surfaced about this time. The average size of walleyes in the Big Dry had decreased from previous years, and lack of suffi-

Turnaround At Fort Peck Reservoir

by Jim Liebelt



The future outlook for sport fishing in Fort Peck Reservoir (above) appears brighter. The Big Dry Arm (right) produced especially good walleye fishing in the mid-1970s, but by 1980 it had begun to taper off. Biologists are now optimistic that fishing will improve, due to introduction of new forage species, improved walleye egg collection, upgrading of the Miles City Hatchery, and control of reservoir water levels to favor spawning fish.



MIKE ADERHOLD



JIM LIEBELT



MIKE ADERHOLD

cient food—forage fish—seemed directly responsible. Yellow perch, as well as several other minnow species, had been the main food sources. However, fisheries biologists noted a gradual decline in these forage populations. Although the reasons for the decline were not known for certain, biologists thought they were related to the annual operating cycle of the reservoir's water levels and lack of aquatic and flooded terrestrial vegetation.

As part of a solution, fisheries specialists introduced two new forage species, spottail shiner in 1983 and cisco in 1984. Spottails were chosen because they are prolific and inhabit shallow water. They are also a natural prey species for walleyes in midwestern and Canadian lakes. Cisco, on the other hand, normally live in colder, deeper water, but walleye and other predator fish feed on them heavily when they are available. Both spottails and cisco seem to have taken hold in Fort Peck.

To speed walleye recovery, the department restricted harvest. In 1983, the limit was reduced from 10 to five fish in the Big Dry Arm and lower sections of the reservoir, and only two setlines were allowed (instead of the former six). Sportsmen still could enjoy the opportunity to fish for walleye, but the restrictions indicated the department's concern and commitment toward improving the fishery.

Lake trout—Another important species in Fort Peck history is the lake trout. The popularity of fishing for "lakers" has steadily grown over the years, especially during spring and fall. At these times, the fish move into shallow water and are easier to catch. Fishermen commonly catch 3- to 6-pounders, with an occasional 10- to 15-pounder caught. With cisco's introduction and establishment, much larger lake trout could appear, since cisco is one of the laker's prime food sources. Lake trout have successfully reproduced in Fort Peck, and additional plants will probably not be necessary.

Smallmouth bass, chinook salmon—In an effort to improve sport fishing, the department has introduced two new species of sport fish into the reservoir. Smallmouth bass have been released in several areas and fishermen are beginning to catch them. Biologists

have found evidence of smallmouth reproducing, indicating suitable habitat for spawning and rearing of juvenile fish. The other recent introduction (1984) is the chinook salmon. Because the chinook is almost totally piscivorous (fish-eating), initial plants have been relatively light (stocking a large number of fish could interfere with cisco before they become firmly established in the reservoir). Chinooks will have to be released every one or two years because natural reproduction in the reservoir or Fort Peck tributary streams is unlikely.

Walleye eggs—A particularly important part of the department's effort to improve sport fishing in eastern Montana—particularly in Fort Peck—has involved finding a reliable source of walleye eggs, preferably within Montana, for hatching at the Miles City Fish Hatchery. Previously, the department relied on out-of-state egg sources, and the number requested and the number received varied widely from year to year.

A possible long-term source was found in the Yellowstone River below Intake Dam. Each spring, walleyes migrate out of Garrison Reservoir (in North Dakota) to spawn in the Yellowstone's lower reaches. Beginning in 1983, department fisheries personnel set up a small spawn-taking camp along the river. Biologists captured adult fish and carried them back to the station. The eggs were stripped into a pan and mixed with sperm, thus allowing fertilization. Biologists then transferred them to egg boxes, water hardened them for several hours (a natural process that toughens the egg membrane), and later took them to the Miles City Hatchery.

During the first year, only about one-half million eggs were obtained because of problems with equipment, low water in the river, and small numbers of females. However, the following year, things went better and about 17 million eggs were collected. Unfortunately, hatching success was very poor, less than 10%. The consensus among fisheries workers, however, was to try one more year before giving up on the Yellowstone run. As it turned out, 1985 was something of a charm. Roughly 27 million eggs were taken, with a hatching success of around 41%. In the world of walleye



MIKE GURNETT

The popularity of lake trout fishing in Fort Peck has grown steadily over the years.

fish culture, this is considered good.

This operation will continue; with a small expansion of equipment and effort, fisheries biologists believe egg production could easily be doubled in 1986.

Miles City Fish Hatchery—Another important step in the turnaround happened when the Montana Legislature decided to revamp the hatchery facility at Miles City. Warm-water fishermen across the state can thank Gov. Ted Schwinden, the Fish and Game Commission, certain key legislators, and Walleyes Unlimited of Montana for their support of the warm-water fishery program. Their help was crucial in securing passage of bills for the funding and upgrading of the hatchery.

The new hatchery will be able to produce 42 million walleye fry, 2.1 million walleye fingerlings, 5 million northern pike fry, 550,000 northern pike fingerlings, 500,000 each of smallmouth and largemouth bass fingerlings, and 22,000 channel catfish fingerlings.

Construction is anticipated to begin in 1986, and will probably be completed in 1987.

Rearing ponds—Another department effort has involved using rearing ponds adjacent to Fort Peck Reservoir to decrease the time it takes to produce fingerling-sized fish from fry. Several ponds adjacent to Fort Peck Reservoir have been used for cisco and walleye fry. The larger fingerlings have a much better chance for survival than those planted as tiny fry. Due to lack of runoff, the ponds have been filled by pumping water from the reservoir. The Corps of Engineers at Fort Peck has provided a pump as well as manpower to help fill the ponds with water. Members of the Fort Peck Big Muddy Sportsman's Club and the Glasgow Chapter of Walleyes Unlimited also provided volunteers.

Fertilizer was added to the ponds to increase production of zooplankton, which are almost-microscopic aquatic animals and critical first food of fry. Water in the rearing pond warms more

rapidly than in the reservoir; this speeds the metabolic rate of the fish. Food is also easier to find and capture in the ponds than in the reservoir, so the fry grow faster. After a few weeks, when the fry have reached fingerling size, the ponds are drained directly into Fort Peck Reservoir without any further handling of the fish. The process is simple, quite economical, and results are usually very good.

Although more rearing ponds are needed to make a significant contribution to the sport fishery in the reservoir, lack of suitable sites, manpower, and money continue to limit major expansion of this program.

Reservoir water levels—As alluded to earlier in this article, reservoir water levels directly influence reproductive success of many fish species in Fort Peck. With the exceptions of lake trout and brown trout, cisco, salmon, and burbot, other species in the reservoir are spring or summer spawners. Walleye, sauger, yellow perch, and northern pike are among the earliest to spawn, with others following as the water warms. Some minnow species may even spawn into late summer.

Each species has its own requirements for spawning. But generally, vegetation—either flooded shoreline or aquatic—is the key element in determining the reproductive success and eventual survival. Northern pike, buffalo, and carp require flooded vegetation to successfully reproduce. The timing of the flooding of the vegetation must closely coincide with the period when the fish spawn. Flooded terrestrial and aquatic vegetation also provides cover and harbors food for newly hatched fish.

According to fisheries experts and others familiar with the reservoir's history, the primary problem with Fort Peck has been the water cycle of the reservoir. The cycle has remained relatively constant since the mid-1960s, after Garrison Reservoir in North Dakota was filled. Water levels peak in July, with a gradual drawdown until March of the next year, when spring runoff again begins to raise the reservoir's water level.

In many years, annual fluctuation is less than 10 feet. Unfortunately, this kind of cycle is not conducive to establishment of terrestrial shoreline vegetation on the unstable clay and

continued on page 26

THE CATCHALL

Anti-Poaching Program on Line

Although most of us have been taught since we were children that "crime doesn't pay," now it might, particularly if you're a person who turns in a poacher.

Erv Kent, Administrator of the Law Enforcement Division for the Department of Fish, Wildlife and Parks, said the implementation of a new statewide program aimed at reducing the loss of Montana's valuable wildlife resources to poachers has now made it possible for persons "who give the Department a TIP on poaching activities to receive a monetary reward for their help."

The 1985 Legislature authorized the Department to establish the reward program and to establish a new toll-free telephone number for implementing it. The program is intended mainly to address serious wildlife violations that are having a significant impact on the resource, Kent said. These violations included an illegal commercialization of wildlife, hunting and fishing during closed seasons, night hunting, overlimits of fish and game, etc. Several other states have had such programs "up and working" for several years now, he said.

TIP, Kent explained, is the acronym now being used for the state's new "Turn In Poachers" program. The toll-free number citizens can call to report a poaching incident is: 1-800-847-6668. "But those who want to report a suspected poaching activity don't have to remember the number," he continued. "All they have to do is dial: 1-800-TIP-MONT, and they'll have us on the line."

To make the program even more effective, he said, callers don't have to reveal their names to receive rewards. "We've worked out a system so that callers can remain anonymous and still be eligible for payments," Kent explained.

Kent noted that although a schedule of reward payments for information on various types of poaching has yet to be finalized, callers who make their calls now will be eligible for rewards. "Interestingly," Kent continued, "reports from other states with similar programs indicate that many of those who use TIP-like programs are just concerned citizens who could care less about the reward."

Kent emphasized that the program's five-member board of directors, appointed by Department Director Jim Flynn, will make all decisions concerning who should be paid for their tips and the amount they will be paid. "These decisions will be based on the seriousness of the poaching incident reported and the value of the tip in apprehending a suspect," he said, "and those persons arrested don't have to be convicted for the caller to receive a reward."

"Montana's wildlife belongs to all the citizens of the state, and thus, poachers are stealing from all of us," Kent said. "If we are going to cut down on the number of poaching incidents that now take place, citizens must become involved. We believe putting some money in the pockets of those who help us apprehend poachers will greatly help us reduce the effects of this serious crime on our wildlife populations."—*Bill Phippen, information officer*

Film Festival Set for April

The University of Montana Student Chapter of The Wildlife Society will sponsor the 9th International Wildlife Film Festival (IWFF) April 7-13, 1986 on the Missoula campus. Deadline for submitting applications and films is March 17, 1986.

Amateur and professional wildlife films produced or released during calendar year 1985 (exceptions must be in writing) are eligible and competition will be conducted in several categories. Entries will be judged before the festival; winning entries will receive awards, and results will be internationally published.

In addition to its regular activities, the 9th IWFF will include a live wildlife program transmitted from the Lee Metcalf Wildlife Refuge, a wildlife writers conference, and a symposium on the interrelationships and influences between wildlife or wildlife science and the humanities.

Information, eligibility rules, application forms, and the festival agenda are available from: International Wildlife Film Festival, Wildlife Biology Program, University of Montana; Missoula, MT 59812 (406/243-4493).

Former Commissioner Arnold Rieder Dies

Former Fish and Game Commissioner Arnold Rieder died in a Great Falls hospital Sept. 3. Mr. Rieder, 79, was recognized statewide for his work with legislation to benefit wildlife.

He was born in Switzerland and came to the United States with his family when he was 6. He lived in Pennsylvania, Illinois, and Oregon before moving to Boulder, Mont., entering the cattle business in 1942. In later years, he divided his time between the Boulder ranch and a home in Helena.

He served four terms in the Montana House of Representatives, beginning in 1951, and in the Montana Senate from 1959 to 1967. In a 1983 interview in *Montana Outdoors*, Mr. Rieder cited membership on the Fish and Game Committees in both houses as a highlight of his legislative years.

During the 1957 session, he developed and sponsored a bill that became Montana's Hunter Safety Act. Its passage made Montana the first western state to have such legislation. He also sponsored a bill to prevent the straightening of streams.

He served as a Fish and Game Commissioner from 1971 to 1976 and believed his

GIVE A TIP ... MONTANA

**T I P
TURN IN POACHERS**



1-800-TIP-MONT (847-6668)

experiences as an outdoorsman, rancher, and legislator helped him with the job. In 1984, the Montana Wildlife Federation named him "Conservationist of the Year."

He is survived by his wife Floy Crabtree Rieder; two sons, Dan Rieder of Bozeman and Dave Rieder of Boulder; and two daughters, Sarah Tudor of Great Falls and Mary Stahl of Fairview.

In the interview in *MO* previously mentioned, written by Mr. Rieder's long-time friend Bob Cooney, tribute is paid to Mr. Rieder that his friends and associates join in: "Arnold Rieder has given a great deal of himself to Montana, particularly to the state's young people. Surely, it is people like him—so generous with their time and efforts—who make this a pleasant place in which to live and raise children and grandchildren."

BOOK REVIEWS

THE HUNTER'S GUIDE TO MONTANA, By Mark Henckel, Falcon Press, P.O. Box 279, Billings, MT 59103; 1985, 212 pages; \$16.95, hard cover; \$9.95, paperback.

When you're hunting new country, whether it's for upland birds, deer, antelope, geese, or elk, the handiest thing in the world to have is a local guide. Not necessarily a "for-hire" guide who will provide your food and lodging and tend to all your earthly needs, but someone with intimate knowledge of local terrain and hunting conditions. The kind of guy who will sit down with you over a cup of coffee and tell you how the game is played on his turf and point you in the right direction. If you can find such a person, as everyone who has done much hunting knows, you will save lots of time and boot leather and vastly increase your chances for success.

Mark Henckel's new book, "The Hunter's Guide to Montana," may not be quite as good as having a living, breathing expert at your elbow, but it's the next thing to it. The reason is that Henckel interviewed 120 of the state's most experienced hunters of big game, upland birds, and waterfowl, and included these interviews in his book. They tell, in their own words, what works best for hunting the various game species in their own section of the state.

To make this concept work, Henckel has divided the state into eight regions: headwaters country, tall timber, wilderness, high plains, breaks, farm country, cattle country, and peak and prairie country. For each region, he discusses the terrain and the species that reside there, leaning heavily on the interviews with local experts in the process. As he points out in the foreword, "... you will read about the differences among such things as hunting elk in the Missouri Breaks in archery season, the Bob Marshall

Wilderness when they're bugling, the thick timber of southwestern Montana, and the winter migrations of the Gallatin River drainage. It will tell you about differences in terrain, and the animals that live in it, from one end of the state to the other. . . . There's no way any one individual could provide that kind of knowledge of wildlife and tactics in hunting country so large and diverse as Montana."

Outdoor editor of the *Billings Gazette*, Henckel skillfully administers the glue that holds these interviews together, making a readable, entertaining, and informative book. A knowledgeable outdoorsman, Henckel reminds us that the book, because it gives insight into the habits and lifestyles of the various birds and animals, "... should be a valuable tool for the serious wildlife photographer, the active naturalist who just wants to go out and observe wildlife and the armchair bird and big game watcher who revels in learning a little more about the animals of the Treasure State."

The book, illustrated with numerous black-and-white photos and 13 pen and ink drawings by artist John Potter, also includes a map of each region, a distribution map for each of Montana's game species, sources for maps and additional information, and some useful data on outfitters and field care of game.—*Dave Books, editor*

ELK HUNTING IN THE ROCKY MOUNTAIN WEST, by Ed Wolff and Gary Holmes, Stoneydale Press Publishing Co., 304 Main St., Drawer B, Stevensville, MT 59870; 1985, 54-minute video, \$59.95.

This full-length video program, filmed by Ed Wolff and Gary Holmes and edited by Bob Brunk, features some stunning elk photography, bowhunting and rifle hunting sequences, and lots of useful tips on elk hunting, including an elk bugling demonstration. The video is available at several video stores around Montana for sale or rent, or copies may be ordered

directly from Stoneydale Press.

The video program, together with Ed Wolff's book "Elk Hunting in the Northern Rockies," and Dwight Schuh's "Bugling for Elk," also published by Stoneydale, provide a valuable background for elk hunters at all levels of skill.

The Mountain Plover *continued*

easier for mountain plovers to spot and capture. Olson's study found that preferred insect species were frequently more abundant on prairie dog towns than in adjacent areas. Thus, the short vegetation in prairie dog towns may directly or indirectly be a key factor in selection of prairie dog towns for breeding sites by mountain plovers in this area of Montana.

Although mountain plovers are not common, they are not considered threatened. The Montana Department of Fish, Wildlife and Parks considers the mountain plover as a bird of special interest and concern because of its limited numbers and distribution in Montana. There has never been any attempt to census mountain plovers in Montana, but their breeding range in the state has become increasingly restricted. In the Phillips County area, however, this bird is at least holding its own, and numbers may actually have increased. Prairie dog populations have increased in this area over the past 13 years because of greater restrictions on their control.

Almost nothing is known about the wintering ecology and status of mountain plovers on their wintering grounds in Texas, southern California, and Mexico. Loss of habitat in traditional wintering areas may well be the next environmental change to negatively affect mountain plover populations. For the present, however, Montana's uncommonly exceptional bird will remain a unique member of the state's avifauna—as long as its prairie habitat remains intact. ■

MONTANA OUTDOORS INDEX

The major items published in *Montana Outdoors* in 1985 are indexed below. Extra copies of all '85 issues are available at \$1.50 each, plus 25 cents for postage. Some earlier back issues are available at the same price.

To inquire about or order a back issue, write: Back Issues, Montana Outdoors, Department of Fish, Wildlife and Parks; Helena, MT 59620.

BOOKS REVIEWED

Waterfowl Decoys of Michigan and The Lake St. Clair Region—by Clune Walsh Jr. and Lowell Jackson (March/April).

The Enchanted Broccoli Forest—by Mollie Katzen (March/April).

Grouse of the North Shore—by Gordon Gullion (May/June).

Ridge Runners and Swamp Rats—by Charles F. Waterman (May/June).

Birds of the Northern Rockies—by Tom J. Ulrich (May/June).

The Angler's Guide to Montana—by Michael S. Sample (May/June).

Freshwater Wilderness: Yellowstone Fishes & Their World—by John D. Varley and Paul Schullery (July/August).

Up on the River—by John Madson (Sept./Oct.).

The Last Book: Confessions of A Gun Editor—by Jack O'Connor (Sept./Oct.).

The Hunter's Guide to Montana—by

DEPARTMENT LANDS/PARKS

Back from the "Iron Horse"—At the Sluice Boxes State Monument, a rich accounting of yesterdays awaits (Mike Gurnett, March/April).

Scenery and Solitude Close to Town—Lone Pine State Park near Kalispell has much to offer (Terry Knupp, May/June).

Missouri Headwaters State Park: Unfolding History—Montana's Bicentennial Park is both historic and scenic (Doug Monger, July/August).

FISH/FISHING/WATER

The Clark Fork Legacy—There are many rungs yet to be built on the Clark Fork ladder of recovery (Larry Peterman, March/April).

Broodstock Management: Part of the Fisheries Challenge—Department biologists are constantly working to obtain the maximum use from hatchery-produced fish (Thurston Dotson, March/April).

Gas Bubbles on the Bighorn: A Deadly Mystery—Gas bubble disease is a threat to fish in the Bighorn River (Wade Fredenberg, May/June).

1984 Fishing Records Summary—(May/June).

Montana Suckers: Aquatic Vacuum Cleaners—One of our most maligned fishes, the sucker, is also tough, adaptable—and successful (George Holton, May/June).

If You See a Fish Kill . . .—Why you should report it, and how to do so (Glenn Phillips, May/June).

Managing Fish on the "Mighty Mo"—If one word could describe the fishery in the Wild and Scenic Missouri River, "diversity" is that word (Rod Berg, July/August).

Kokanee in Lake Koocanusa: Silver from the North—The kokanee in Koocanusa have become an "item" in northwestern Montana (Brad Shepard, July/August).

Wild Trout Management: Commitment to Excellence—Commitment to wild trout management carries with it a commitment to habitat protection (Jerry Wells, July/August).

Those Bloomin' Algae—An unusually hot and dry summer contributed to a bloom of toxic algae on Canyon Ferry Reservoir in August 1984 (Loren Bahls, July/August).

Perspectives—"On Being a Fish"—If you imagine yourself undergoing the transition from human to fish, many things about the latter become clear (John D. Varley and Paul Schullery, July/August).

Montana's Wilderness Fishery: Should We Manage It, Or Leave It Alone—Each year, fishing becomes more a part of our wilderness activities (John Fraley, July/August).

Where Nature Reigns Supreme—Blackie,

the paddlefish, was the matriarch of the Missouri. The Catchall (Rod Berg, July/August).

Jumping Water—The wildlife show is highlighted by a silent miracle in the river (Paul Schullery, Sept./Oct.).

A Dam That Didn't Damn Trout—A portion of the Beaverhead River proves to be trout paradise. The Catchall (Jerry Wells, Sept./Oct.).

Turnaround at Fort Peck Reservoir—Better sport fishing at Fort Peck Reservoir could be just around the corner (Jim Liebelt, Nov./Dec.).

GAME/HUNTING

Perspectives—"The Warden and the Poacher"—The only winner was an outsider (Pat Barnes, May/June).

Opening Day—Opening day of pheasant season duplicates the noise, confusion, and excitement of the Fourth of July (Dave Books, Sept./Oct.).

Outfitters—Do You Need One?—What are your goals in making a backcountry trip? (Jim Zumbo, Sept./Oct.).

Perspectives—"The Pipes"—Opening day at Ninepipe (Ed Merritt, Sept./Oct.).

Choosing a Youngster's First Gun—First guns help shape a youngster's perceptions of the shooting sports (R.E. "Bob" Fears, Jr., Sept./Oct.).

Partners—Partners don't need to finish their sentences (Mike Logan, Sept./Oct.).

Tune In and Tune Up—A clean, sighted-in firearm can boost your hunting success (Merlin L. Smart, Sept./Oct.).

The First Saturday After Labor Day—Sept. 7: Grouse seasons are finally open (C. Robert Watts and Frank G. Feist, Sept./Oct.).

Bull of the Woods—Researchers are collar-ing northwestern Montana moose (Randy Matchett, Sept./Oct.).

Odyssey of an Elk—The need for high-quality forage leads elk on a constant search for "greener pastures" (Earl Willard, Nov./Dec.).

Perspectives—"Making an Elk Purse Out of a Cow's Ear"—Successful hunters are burdened with the truth to limit their season of fun (Mark Henckel, Nov./Dec.).

Game Damage—A Squeaky Wheel With Lots of Spokes—At the hub of the wheel is game damage itself—and what some people perceive as a growing intolerance for it (Mike Aderhold, Nov./Dec.).

GENERAL

Special Photo Issue—(Jan./Feb.).

Travel On, But Leave A Name Behind—Although names may stick, their origins often remain secret. The Catchall (James J. Jonkel, March/April).

Capturing Nature With a Camera—A "how-to" article with some easy-to-understand tips (Keith Szafranski, May/June).

Water Safety: It All Depends on You—Much more can—and should—be done to prevent drownings (Bob Miller, May/June).

Tipi Rings: Circles of Stone—Tipi rings are one of the pathways into Montana's prehistory (Les Davis, May/June).

Bivouac—A bivouac is a camp with little or no shelter used only for a short time. The Catchall (Terry Knupp, May/June).

Glacier Celebrates 75 Years—In 1984, nearly 2 million visitors enjoyed this high-mountain jewel (July/August).

Working in Yellowstone: Then and Now—"Yellowstone Summer: 1924" (Mary Dawe Lowry) and "Yellowstone Summer: 1983" (Denise Mackesy, July/August).

Teeth Provide Age, Other Info—The teeth from harvested game and furbearing animals provide biologists with valuable information (Gary and Judy Matson, Sept./Oct.).

Birding—The Sky's the Limit—Part of the appeal of birding is that the possibilities are endless (Larry S. Thompson, Nov./Dec.).

"Fourth Season" Campout—Winter camping avoids summer inconveniences: mosquitoes, snakes, and lots of other campers (Doug Monger, Nov./Dec.).

Cold Bath in the Beaverhead—Summer floating and hunting ducks while floating in mid-December are two very different activities (Neil Cantwell, Nov./Dec.).

HABITAT/ENVIRONMENT

The Elkhorn Experiment—Years of debate have led to unique management for this wildlife-rich area (Rich DeSimone, March/April).

Arresting Weeds: Ninepipe—Ninepipe WMA now is regarded as one of the best examples of noxious weed control in the state (Mike Aderhold, March/April).

Adopting a Wilderness—A Ronan High School natural history class works to clean up litter in the Mission Mountains (Bill Sager, Sept./Oct.).

NONGAME WILDLIFE

A Harlequin Romance—Harlequin ducks are among the rarest and most interesting of Montana's wildlife species (Larry S. Thompson, March/April).

Perspectives—"About Bluebirds"—Bluebirds annually return to a farm near Conrad (March/April).

River Otters: Lords of the River—Otters are elusive, playful furbearers whose presence is one of the indicators of a quality environment (Hugh Zackheim, May/June).

The Mountain Plover: Uncommonly Exceptional—Because of the type of country it inhabits, it could more properly be called "prairie plover" (Craig Knowles, Nov./Dec.).

CONTRIBUTORS

- The "Odyssey of an Elk" is a year-round proposition. In spring, the search leads the cow to grassy slopes and nourishment to sustain the soon-to-be-born calf resting within her; in summer, the succulent grasses, forbs, and shrubs she eats contribute to the life-giving milk for the newborn calf. When fall comes, she and the calf migrate downslope toward the winter range. Turn to page 2 for **Earl Willard's** piece on the cyclical nature of an elk's life. Willard is professor of range resource management at the University of Montana, Missoula; he also teaches a course in animal nutrition at UM.

The illustration for Dr. Willard's article was prepared especially for this issue by **Robert Neaves**, Corvallis. He has had numerous one-man shows, and his work appears in public and private collections throughout the United States and abroad. His accurate and colorful paintings illustrated the "Identification of Montana's Big Game Mammals" in our Nov./Dec. 1984 issue. For more information about his work, contact: Western Images, 730 Hamilton Heights Rd.; Corvallis, MT 59828 (406/961-4808).

- "The Mountain Plover" is an "Uncommonly Exceptional" bird. Take its name. Most birds have names relating to their scientific appellations, or to a physical characteristic. The mountain plover is an exception; it lives on the shortgrass prairie, not in the mountains. Turn to page 6 for more examples of the mountain plover's uncommon exceptions. Writer **Craig Knowles** is a wildlife biologist with Fauna West Wildlife Consultants in Columbus. He holds bachelor's and master's degrees in fish and wildlife management from Montana State University, Bozeman, and a Ph.D. in zoology from the University of Montana, Missoula.

The mountain plovers so appealingly depicted by **Karen Ray Brower** were done especially for this issue of **MO**. Brower has bachelor's and master's degrees in biology and has lived in Butte for almost four years. Her work can be seen at the Robin's Nest, Butte; Tatem House, Helena; Wishing Tree, Livingston; and Orvis Wild Wings, Bozeman. She works from her studio/home, and her art can be seen by appointment: 10 Cedar Lake Drive; Butte, MT 59701 (406/494-4179).

- "Those in the know concerning the possibility of better sport fishing at Fort Peck Reservoir are expressing cautious optimism," writes **Jim Liebelt**. Turn to page 8 for an explanation of this "Turnabout at Fort Peck Reservoir." Formerly a fisheries biologist for the department at Fort Peck,

Liebelt is now the department's information officer for Region 6 (Glasgow).

- If you've ever given thought to the idea of becoming a birder, **Larry S. Thompson's** article will help make your thought a reality. He notes the hobby's appeal: It doesn't cost much; even inexperienced birders can have a good time, and lots of amateur experts are ready, willing, and able to share their knowledge. Thompson is the biological sciences coordinator for the Department of Natural Resources and Conservation. He recently completed a book on Montana's 19th century explorer-naturalists, "Montana's Explorers—the Pioneer Naturalists." Turn to his article on page 15.

Shirley A. Johnson's expertise in pastels is just the thing to illustrate Thompson's birding article. Her home and studio near Missoula are not far from the Rattlesnake Wilderness Area, and many of her subjects are painted from her studio window. She has been a guest artist at shows throughout the Northwest, and has won many awards for her paintings. For more information about her work, call or write #6 Greenbrier Dr., Lincoln Hills; Missoula, MT 59802 (406/728-8119).

Jan Bonham Metzmaker's well-executed pen and inks of birds also help illustrate "The Sky's the Limit." She has worked for the National Park Service in Glacier National Park and the Lolo National Forest, and operates a card and calendar business featuring drawings of Glacier's wildlife. Her work can be seen by appointment: 716 Edgewood; Whitefish, MT 59937 (406/862-7960).

- Floating in the summer can be a grand way to spend a hot day. Taking "A Cold Bath in the Beaverhead" in mid-December can be a cold way to end a float. Turn to **Neil Cantwell's** article on page 24. Cantwell is a police officer in Steamboat Springs, Colo. He previously lived in Butte and notes he gained his Beaverhead knowledge from his Butte days. He has written a weekly outdoor column for the Steamboat Pilot for the past 10 years under the pen name, Carl Creel; Mr. Creel's book, "Your Fly Is Down!" is also available from the Steamboat Pilot, Box 771238; Steamboat Springs, CO 80477.

Illustration for the "Beaverhead" story was prepared especially for this issue by **Diane Nugent**, Butte. A free-lance commercial artist, Nugent has also competed in shows with her watercolors, pen and inks, and combination pressed flowers and watercolors. Her work can be seen at the Robin's Nest and Arts Chateau, Butte; Copper Village, Anaconda; and Tatem

House, Helena.

- Many of **Doug Monger's** friends think he's more than a bit peculiar when he tells them he actually enjoys camping out in winter. Turn to "Fourth Season' Camp-out" on page 27 and decide for yourself. It's hard to argue with his logic—he notes winter camping is just summer camping *sans* all the inconveniences: mosquitoes, snakes, and lots of other campers. Monger is the parks manager for Region 7 (Miles City).

- **Mike Aderhold** depicts the game damage situation as "A Squeaky Wheel With Lots of Spokes." At the hub is game damage itself, and what some folks perceive as a growing intolerance for it. The spokes are the various elements affecting the issue. At the rim are the landowners, sportsmen, and other wildlife advocates looking down the many and various spokes at the problem—and expressing many and various opinions about what should be done. As Aderhold writes, "If the wagon of wildlife management is to go forward at a steady pace, we need to tend to the wheel." Turn to his masterful, comprehensive treatment of the subject on page 31. He is the department's information officer in Region 1 (Kalispell).

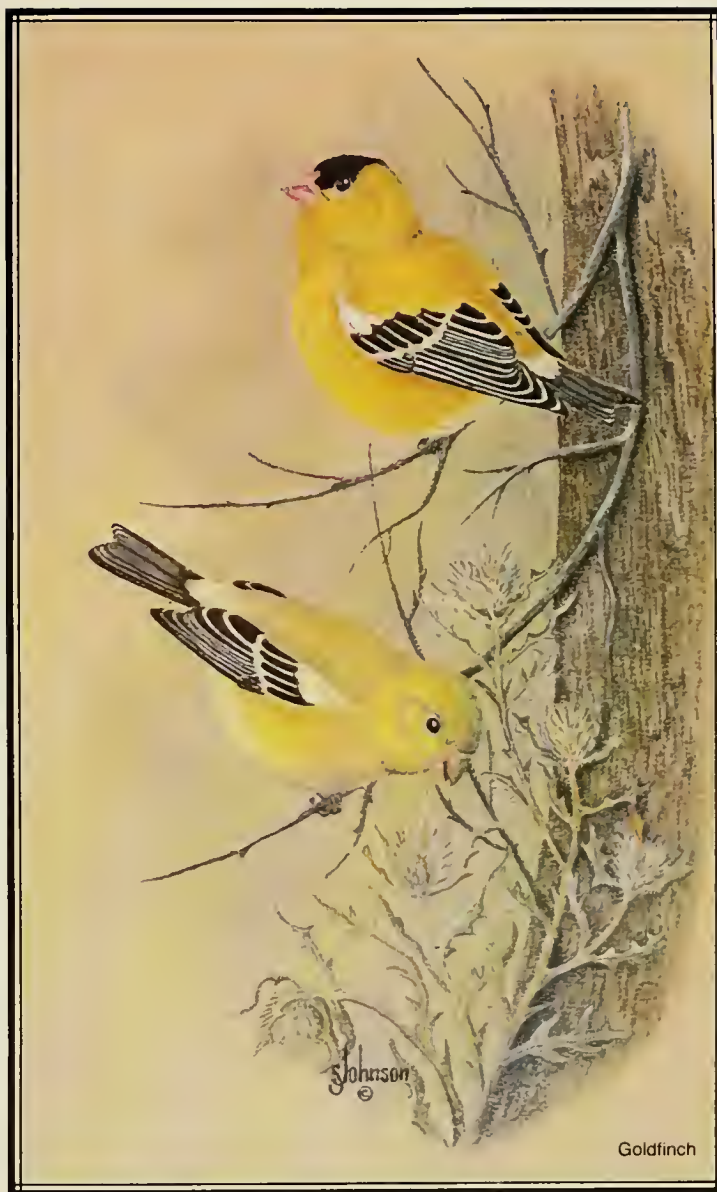
- **Mark Henckel** continues **MO's** "Perspectives" series with some yarns "that will beat the sage stuffing out of the tales told by successful hunters . . . burdened with the truth. . . ." Henckel is the outdoor editor for the Billings Gazette; his book, "Hunter's Guide to Montana," was recently published. Turn to his perspectives on yarns vs. truth on page 36.

John Potter's illustration for Henckel's piece is about as appropriate as they come. Potter is an editorial artist for the Billings Gazette. His cartoons have appeared in many publications throughout the West, and his paintings and drawings hang in private collections from Wisconsin to California.

- The watercolor of cedar waxwings that brightens the back cover was done by Helena artist **Loren Kovich**. His work has won many awards and been part of several juried shows, including the National Wildlife Art Show in Kansas City, and the Northwest Watercolor Society 45th Annual Exhibition in Bellevue, Wash. He is represented in galleries throughout Montana and Idaho.

- Special thanks to the following photographers: **Gary D. Holmes**, Lolo; **Peter Kagan**, Heron; **Tim Lucas**, Boulder, Colo.; and **George Wuerthner**, Missoula.

Birding— The Sky's The Limit



Goldfinch

by **LARRY S. THOMPSON**

illustrated by

SHIRLEY A. JOHNSON and JAN BONHAM METZMAKER

On June 3, 1805, Meriwether Lewis and William Clark, ascending the Missouri River toward the Rocky Mountains, arrived at a junction where two large rivers flowed together. "An interesting question," wrote Lewis, "was now to be determined; which of these rivers was the Missouri?"

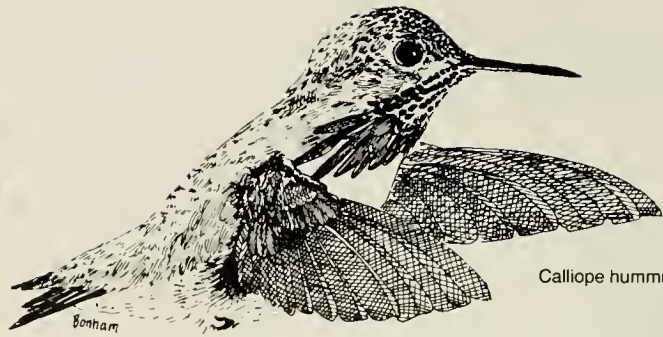
The question was not an idle one; the success of the whole expedition hinged on a correct answer: "...to mistake the stream at this period of the season," Lewis predicted, "...would not only lose us the whole of this season but would probably so dishearten the party that it might defeat

the expedition altogether." The explorers therefore lingered at the junction for many days, carefully examining each branch.

Perhaps to take his mind off the pressing decision at hand, Lewis took an early morning walk along the cottonwood bottomlands of the Missouri to do some bird-watching. "The river bottoms affording all the timber which is to be seen in the country," wrote Lewis. "They are filled with innumerable little birds that resort thither either for shelter or to build their nests, when sun began to shine today these birds appeared to be very gay and sung most enchantingly...."



Peregrine falcon



Calliope hummingbird

and routes, support groups, scheduled activities, newsletters, and something for people of all levels of ability and eagerness to pursue. As in karate, one passes through a series of "belts." But unlike karate, it doesn't end with the black belt. The sky's the limit.

Many people who simply love to watch birds eventually become involved in bird photography—as challenging a hobby as one can imagine. As a budding bird photographer soon learns, one doesn't just aim and shoot. Success depends on stalking ability, timing, preparedness, spending hours in a blind, and other forms of just plain hard work, not simply luck. The key to successful bird photography is careful study of the habits and behavior of birds. Therefore, bird photography leads naturally into the study of bird behavior,

The result of Lewis' stroll was the first bird list ever compiled in Montana: "I observed among them the brown thrush, robbin, turtle dove linnit goaldfinch, the large and small blackbird, wren and several other birds of less note." A similar list of birds might be compiled at the same spot (the mouth of the Marias River) today: the brown thrasher, American robin, mourning dove, American goldfinch, Brewer's blackbird, common grackle, and house wren.

The expedition, of course, made the correct choice at the junction and followed the southern fork toward the Great Falls.

Today, 180 years after Lewis, hundreds of Montanans regularly walk the state's rivers, forests, and valleys—even her city streets—watching birds as did Lewis. And many, like Lewis, perhaps find in bird-watching a magical way to take their minds off their troubles. For in the early morning hours, the "miriads of the feathered tribes," as Lewis called them, "salute the ear of the passing traveler with their wild and simple, yet s[w]eet and cheerfull melody" dispelling one's worries and making all seem right with the world.

Such is the allure of birding. It is a sport which can be enjoyed by all, young or old, rich or poor. A beginner can start without spending a dime, and anyone—from high school student to college professor—can, with dedication, become an expert. It is not surprising, then, that bird-watchers number some 68 million nationwide, about one-third of the country's population. Few other sports can claim such a following.

But another part of the appeal of birding is that the possibilities are endless. From the casual bird-watcher who simply enjoys seeing and listening to birds, a progression of "steps" or stages of involvement leads onward, and enjoyment can be found at any stage. Beginners will find at each step a highly organized infrastructure, standardized methods



Western meadowlark

and many of our best bird photographers, such as Tom Ulrich of West Glacier and Alan Nelson of Great Falls, are expert ornithologists as well.

Another stage to which the casual bird-watcher may progress is that of the "lister." Otherwise normal people become listers innocently enough—one successful identification leads to another, the list of species grows, and finally a rarity is seen, the crowd cheers, and you're hooked. Many birders keep a "life list," a simple check list of all birds positively identified to date. Check lists of Montana birds are available free from the Montana Department of Fish, Wildlife and Parks (DFWP), and many birders keep one in the back of the field guide, checking off new species as they're seen.

Without doubt, the champion lister for Montana is Helen Carlson of Billings, a former president of the Yellowstone Valley chapter of the Audubon Society and one of the state's most capable and enthusiastic amateur birders. According to Helen, "It was on May 5, 1967, at 2:30 p.m. when the bug started to bite... and it never let go!" Helen had gone to the hairdresser that morning, and overheard some friends planning a trip to Three Forks for the afternoon. Helen rode along, and, sitting on a dirt bank beside the river, watched an

assembly of birds so varied and so unexpected that she was hooked for life. There were grebes, loons, herons, cormorants, all kinds of ducks, and songbirds galore—an amazing diversity that caught her completely off guard. Helen's life list now totals 647 species. But she also keeps a state list (birds seen in Montana), a year list, a month list, trip lists, and a daily "yard list"—the birds found in her 100-by-150-foot lot in a residential area of Billings. At last count, Helen's yard list contained 138 different species, the latest

Getting Started



Osprey

Birding has been called the most democratic of sports, since anyone may participate to any extent, regardless of wealth or education. Indeed, one can participate without spending a dime. But as most serious birders soon learn, there are a few tools that make the sport much more rewarding and enjoyable. The most important of these is a good field guide. Most birders I know carry with them one or more of the following:

- "Birds of North America: A Guide to Field Identification," by Chandler S. Robbins, B. Bruun, and H.S. Zim (Golden Press, New York, 1983);
- "A Field Guide to Western Birds," by R.T. Peterson (Houghton Mifflin, Boston, 1961—a revised edition is in preparation); and
- "Field Guide to the Birds of North America," edited by Shirley L. Scott (National Geographic Society, Washington, D.C., 1983).

The second key tool is a *good* pair of binoculars; a cheap pair will bring you nothing but frustration. Birders commonly

use 7x35 (7 is the power) or 7x50, but some prefer 8- or 9-power.

Third, and most often neglected, is a field notebook in which to record such things as your itinerary, birds seen, behavioral notes, and field marks of unusual or hard-to-identify species seen. Your notebook will repay you many times over for the small effort it takes to record your observations; a good notebook has enduring scientific value as well. If your recorded observations are to have the most value, they should include at least the following information: date, time of day, other observers (if any), precise location, and habitat. For rare, unusual, or difficult-to-identify species, also include: approximate distance from the bird, power of binoculars used, approximate duration of observation, and key field marks seen or missing. Such notes should always be made on the spot; a birder who sees what may be a rare bird then goes home to write a description from a picture or field guide, based on memory, is an absolute menace.

Beginners will find support, camaraderie, help, training, and enthusiasm in the local Audubon chapters around Montana. Many people who subscribe to *Audubon* magazine do not realize that they are automatically a member of a local chapter, and that part of their membership fee supports the activities of the local chapter. Even if you're not a member, you're welcome to attend the monthly meetings, field trips, and other functions of the local chapters.

Many chapters sponsor bird identification workshops and other educational activities of interest to beginners and advanced birders alike. Most chapters publish monthly newsletters; contact the chapter president or newsletter editor to get on the mailing list. Montana has eight Audubon chapters, and no birder anywhere in the state is more than an evening's drive from the fun, friendship, and camaraderie of an Audubon meeting. Plan to attend the next meeting of the chapter nearest you:

- Five Valleys Audubon Society—P.O. Box 8425; Missoula, MT 59807
- Flathead Audubon Society—P.O. Box 715; Big Fork, MT 59911
- Last Chance Audubon Society—P.O. Box 924; Helena, MT 59624
- Pintlar Audubon Society—618 E. Sebree; Dillon, MT 59725
- Rosebud Audubon Society—P.O. Box 361; Miles City, MT 59301
- Sacajawea Audubon Society—P.O. Box 1711; Bozeman, MT 59715
- Upper Missouri Breaks Audubon Society—P.O. Box 2362; Great Falls, MT 59403
- Yellowstone Valley Audubon Society—P.O. Box 1075; Billings, MT 59103

Birders in the Libby area are invited to attend meetings of the Kootenai Bird Club, a local birding group not affiliated with Audubon.—*Larry S. Thompson*

additions being Blackburnian and Townsend's warblers. Helen has seen 324 of the 381 bird species reported in Montana.

Eventually, nearly every birder will spot a rarity, a species that no one else has seen in the area or one that is unexpected at that time of the year. The excitement of seeing the first of a species in a county, a "latilong" (see sidebar), or even in the state is hard to beat. The discovery of a rarity or previously unreported species can propel a beginner to instant fame in the birding community and often marks the point at which a casual bird-watcher becomes an enthusiastic birder. It is in the discovery and documentation of these rarities that amateur birders make their most frequent and "high profile" contribution to the scientific knowledge of Montana birds. And amateurs, in fact, provide most of the new species listed for the state. One fall day in 1981, a woman phoned Helen Carlson to report a funny-looking bird at her feeder. Helen investigated and found it to be a summer tanager, a striking bright red bird whose normal range is hundreds of miles to the south—a first for Montana.

From Oct. 1 to Dec. 20, 1981, Helen and her associates watched a yellow-throated warbler—a bird of the south-eastern states—at a feeder in Billings. It was finally killed by a hawk, but the clearly identifiable specimen was saved in time to document it without question as a new addition to the list of Montana birds.



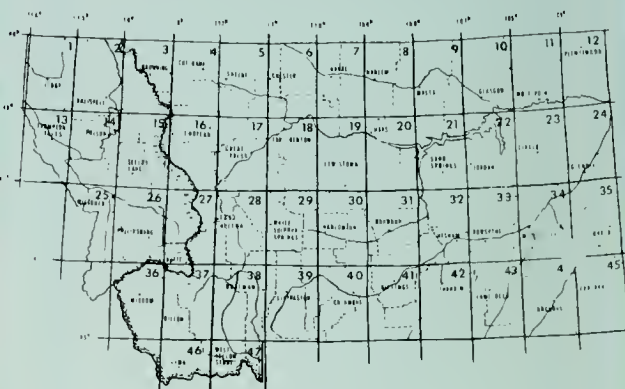
Western tanager

Chuck Carlson (no relation to Helen), an electrical engineer who works for the Western Area Power Administration in Fort Peck, is also one of the state's most active amateur birders. He is responsible for adding nine species to the state list. In fact, Chuck is responsible for fully one-third of the 21 Montana bird species seen only once in the state, including such oddballs as the blue-gray gnatcatcher and Kentucky warbler. Chuck is also an expert bird photographer, and carefully documents his new discoveries with photos. Chuck finds most of the rarities along the Missouri River bottom just below Fort Peck Dam where he walks almost every night after work. But Chuck discovered one species—the red-bellied woodpecker—from his office window. Chuck's most exciting find was a great black-

Latilong Mapping

To any serious Montana birder, the "bible" is P.D. Skaar's "Montana Bird Distribution." The late Dr. Skaar, formerly a professor at Montana State University in Bozeman, was for decades the dean of Montana birders and the mentor of many of the state's currently active birders.

In this book, he pioneered the elegantly simple "latilong" system for mapping bird distribution. A latilong is simply a block of land one degree latitude by one degree longitude—in Montana, roughly 45 to 70 miles. There are 47 latilongs in Montana, as shown on the map, and each is assigned a name and a number. Dr. Skaar's system allows for the mapping not only of distribution but of breeding and wintering status by assigning a letter to each latilong.



BBBt-----
bbbBBt-t-----
BBt-----
bt-t-----t--
--

Fig. 1

WW-----
-w-----
WW-----
--w-----
--

Fig. 2

For example, the two clusters of symbols shown here are miniature "maps" of the distribution of the winter wren in the state. Each letter represents a latilong. Fig. 1 shows the winter wren's known breeding distribution: The letter "B" is used for latilongs in which breeding has been confirmed; "b" is used for latilongs where breeding is suspected. The letter "t" is used for latilongs where winter wrens have been seen but where there is no evidence for breeding. Fig. 2 shows the winter wren's known wintering distribution: "W" denotes overwintering, and "w" denotes other winter records. It is apparent from these "maps" that winter wrens breed only in western Montana, and that they overwinter in the same general area, although transients are occasionally seen even in eastern Montana.

On both "maps," a dash means that no one has reported the species from that latilong. In these dashes, many serious birders see a challenge to go out and try to find the species in the "vacant" latilong, so the dash can be replaced by a "t," "b," or "B."

Much of the success of Dr. Skaar's latilong system is a result of the contribution of hundreds of amateur birders statewide. A revised third edition of Dr. Skaar's book has recently been published through the cooperation of the Montana Academy of Sciences and the Department of Fish, Wildlife and Parks (DFWP) Nongame Wildlife Program. Copies can be obtained for \$3 (postpaid) from: Nongame Wildlife Program, DFWP, Research Park Bldg., Box 5, Montana State University; Bozeman, MT 59717. Birders with new information to report are urged to send documenting details to this same address.—Larry S. Thompson

backed gull, a huge, dark-winged gull normally found off the Atlantic seaboard from Iceland to the Carolinas. Chuck's observation marks the westernmost occurrence ever documented.

Perhaps the ultimate challenge for the lister is the "Big Day" count. The challenge is simple: to observe the most species in a 24-hour period. The current record for Montana, an amazing 151 species, was set by Doug Bonham, Paul Hendricks, Rose Leache, and Jeff Marks on May 31, 1982.



These four birders began their "Big Day" at 4 a.m. at a campground outside West Glacier, where they'd staked out a northern three-toed woodpecker the day before. In Glacier National Park that morning, the foursome picked up dozens of species, including a Le Conte's sparrow and a harlequin duck—not to mention two grizzly bears which strolled by. They tallied a nesting pair of bald eagles near Big Fork, and counted many species of shore birds and water birds at Ninpipe National Wildlife Refuge. The party then returned to Missoula, trying unsuccessfully to add a western bluebird to the list at Miller Creek. From Missoula, the group traveled via Highway 200 to Freezeout Lake, one of the hot spots for water birds in the state. The birders weren't disappointed there: No sooner had they gotten out of the car than an American bittern and a black-crowned night heron flew up right in front of them. A side trip to Ulm Pishkun State Monument yielded a burrowing owl. The last bird of the day, a great horned owl, was heard in Great Falls at 11:30 p.m.

Remarkably, although many rarities were logged during this "Big Day," two very common species—the black-capped chickadee and the green-winged teal—weren't on the list at the end of the day. Bonham estimates that the most species a birder could ever hope to log on a Big Day in Montana is 160—just nine more than the total logged by his group.

Each spring, Audubon Society chapters statewide sponsor local "Birdathons," a type of listing geared toward fund raising. Participants obtain pledges from friends, co-workers, etc. to pay a certain amount for each species of bird seen on one trip—which can be a whole day or part of a day.

It's fairly easy for a participant to get a pledge for, say, a mere quarter per bird; if he or she is successful in seeing a hundred birds—which Helen Carlson hopes to do each year—the total comes to \$25 per pledge! The money raised is shared by local Audubon chapters and the regional Audubon office; the local chapter's share is usually used in scholarship programs. As with all types of listing, "Birdathons," are quite competitive, and participants vie to see who can log the most species and bring in the most money. According to Missouri ornithologist Jim Wilson, "Birding may be our most intensely competitive wildlife sport. A top-flight birder is both envied and revered by those vying to catch him. In spite of occasional jealousies, I have never known anyone to claim having seen birds that he really hasn't. Birders are honorable. They take great personal pride in their sport."

The next step beyond the simple listing of species is counting. Although counting emphasizes the common and ordinary rather than the unusual and spectacular, many birders find in the systematic counting of birds as much excitement and challenge as the hunt for the rarities. Counting birds is not as simple as it may seem. It's very hard to put a number on a huge flock of ducks seen through binoculars at a



distance of a mile, and it's harder yet to estimate just how many horned larks are singing when the air is ringing with their calls in all directions. Because of these difficulties, counting methods have been carefully standardized to fit certain situations and certain times of the year, so that counts can be compared from area to area and from year to year. Three standardized counting methods are widely enjoyed in Montana by professionals and amateurs alike: the National Audubon Society Christmas Bird Count, the Cooperative Breeding Bird Survey, and the Breeding Bird Census.

The first Christmas Bird Count (CBC) was conducted in Central Park, New York City, in 1900. Since, it has become an immensely popular winter outing throughout the country. Last year, 35,000 birders participated in over 1,200 counts nationwide, including 431 birders in 23 Montana counts. The rules of the Christmas count are simple: Birders attempt to

count every bird occurring on a specified day within a specified circle of 15 miles diameter.

In Montana, the CBC is a social event as well as a scientific one. Birders usually meet for breakfast, organize into teams, then attack the assigned area with competitive zeal. At the end of the day the teams get back together, perhaps over bowls of hot chili, to compare lists, talk over exciting or

A morning on a BBS is not one to be soon forgotten. My wife Sue and I have managed to survey "our" route in Lewis and Clark County every year since 1975. The route parallels the Rocky Mountain Front from Bean Lake to Augusta, then takes us toward Gibson Reservoir. We usually drive to Bean Lake and camp out the night before. When the alarm clock goes off at 4:30 a.m., it's still black outside. As we break camp, we hear the first bird songs of the day—the nasal "peeent" of a nighthawk, a few tentative chords from a distant vesper sparrow. We start officially counting at 5 a.m. and are generally finished with the 50 stops by 9 a.m., with as many as 69 species recorded. After bacon and eggs and hot coffee in Augusta, we're ready to enjoy a full day fishing or hiking along the Rocky Mountain Front.

The BBS is designed to get observers out into the field during the peak of the breeding season and during the best hours of the day (the first couple of hours after sunrise). When the first rosy shafts of sunlight strike the flanks of Haystack Butte and illumine the riotous meadows of balsamroot and lupine, the same prairie which was still and silent the previous afternoon is alive with the cacophony of bird songs. It's as though for a few fleeting moments each morning, when most of the world is asleep, the veil is lifted and we are



unusual finds, and compile the official list for the area. This official list is published every year in a special, inch-thick volume of *American Birds* magazine, along with every other CBC list in the country. All participants are listed by name in this publication. Part of the reason the CBC is so popular and well-attended is that anyone of any ability can participate, even beginners with no experience whatsoever. Beginners are paired with experienced birders; usually, by the end of the day, a beginner has learned a great deal and is well on the road to becoming a reliable independent observer.

Experienced birders may also participate in the Cooperative Breeding Bird Survey (BBS), coordinated by the U.S. Fish and Wildlife Service (USFWS) Migratory Bird Research Laboratory in Laurel, Md. Each summer, a nationwide network of BBS volunteers counts birds along predetermined vehicle routes using carefully standardized methods. Counts are made during the peak of the breeding season (June, in Montana). The observer starts at precisely one-half hour before local sunrise and makes three-minute counts of all birds seen and/or heard at each of 50 roadside stops, spaced one-half mile apart along a 24.5-mile vehicle route. The USFWS has set up 47 such routes in Montana—one for each latilong (see sidebar)—but many go begging each year for want of volunteers, and some have never been surveyed. A handful of these routes, however, have been surveyed each year since the program was started in 1968, and the resulting data base is of immense scientific value in monitoring long-term changes in breeding bird populations.



allowed to view the intricate workings of the prairie ecosystem in its full splendor. By 7:30 a.m., things are starting to slow down, and by 8, it's pretty quiet again. A birder who sets out much later than 7 on a summer morning will certainly miss most of the action.

Many of the BBS routes are surveyed by amateurs, but an ability to identify birds by their songs is essential. Many of the species, and probably 75% of the individual birds counted, are never seen at all and reveal their presence only by song. Careful study of R.T. Peterson's "A Field Guide to Western Bird Songs," available as records or tapes at many libraries, will open a whole new world to the beginning birder. It's confusing at first to sort out the different species

when there are dozens of birds singing in every direction, and even more difficult to “guess-timate” how many horned larks or western meadowlarks are singing around each stop. But with practice, one can pick out the lone, plaintive whisper of a distant grasshopper sparrow against the overpowering background of meadowlarks and vesper sparrows, just as one can pick out the quiet voice of a flute against violins, violas, and cellos. And one soon learns to recognize

the voices of birds just as we distinguish the voices of friends. The ability is there in each of us: How many people can you identify immediately after the single word, “Hello,” spoken over a telephone? With a little practice, one can learn to identify an amazing number of bird calls and songs.

Another cooperative survey is the Statewide Raptor Survey, coordinated by DFWP’s Nongame Wildlife Program. Like the BBS, survey routes are arranged on latilongs,

Birding With A Mountain Lion

Part of the joy of birding is the thrill of a new discovery or an unexpected encounter. You never know what you’ll find next. But in all my years of birding, I never before had an adventure quite like the following one.

It was Oct. 20, 1984, a cloudy day in Glacier National Park. Most of the leaves had fallen from the cottonwoods and aspens, but a few golden leaves still trembled in the breeze here and there. I decided to hike into Avalanche Lake to do some late fall birding.

A light snowfall had blanketed the trail with a thin layer, and on my way into the lake I spotted some tracks in the snow. They measured about four inches from top to bottom. Could these be mountain lion tracks? I reached the lake about 5 o’clock, and spotted some Barrow’s goldeneyes. Since it was so dark and cloudy, I only spent about 10 minutes birding at the lake before turning back.

I was hiking alone, something I usually don’t do. But I knew the trail to be a busy one, and I really didn’t expect to run into any wildlife of concern on it. Going into the lake, I had passed at least two large, noisy parties, and I also passed several people after leaving the lake.

Within a few minutes of passing two hikers with a dog, I looked up and saw a tawny catlike creature disappear off the trail. I approached slowly and followed the tracks off the trail about 10 feet. They seemed to match the ones I’d seen earlier. Continuing down the trail, I was more watchful, knowing that the late afternoon could provide more opportunities for seeing wildlife.

For some reason, about 40 to 50 feet down the trail, I stopped and turned suddenly as I heard a faint hiss. There, about 30 feet behind me, was a small, beautiful young cougar. Because of the animal’s predatory instinct, I decided against running or climbing a tree. Instead, I opted for the “Mexican standoff/stare him down” technique. We stared at each other for some time. After five to seven minutes, we both seemed to become bored, and it obviously wasn’t getting us anywhere.

I then tried raising my arms and speaking to the cat. With that, he moved toward me in a slink/sneak position. I then tried growling and snarling at him (as I have done with house cats, to make them retreat). He slowed and pricked his ears a little higher but still moved forward. I then howled like a coyote a few times (not trying to be funny, but seriously trying to find some noise that would spook him away as he was getting fairly close—15 to 20 feet). With that latest noise, he circled off the trail but continued to approach.

Up to this point, I had been basically unafraid and fascinated with this incredible animal. As he approached, I still wasn’t really frightened because I was sure he was simply curious about me (especially after those strange noises he’d heard). He was obviously young. He did not appear gaunt or overly skinny (for a cat), and I couldn’t see his ribs under his thickening coat. I had seen many signs of small game, particularly rabbit tracks, so I was sure he was well fed. He never

flattened his ears as he would if he were about to charge. His tail twitched a bit and he seemed to be in a “sneak” position most of the time. However, I’ve seen house cats in this low position while attempting to evade capture or avoid being seen. This obviously was not a house cat, so I wasn’t willing to bank on house cat behavior. Submissive posture? I don’t think so!

As the cat continued to approach (12 to 15 feet), I became very concerned and anxious that perhaps he wasn’t “just” curious but sick or “human conditioned.” I then took off my pack and decided I would use it (with my birding scope) as a club if I had to. He approached to within six feet of me as I threatened him with the pack and threw a stick at him. After getting hit with the stick, he backed up. So I threw another and missed. He approached again, so I pulled up a small tree and committed myself to hand-to-hand combat if necessary. Throughout, I was still quite calm and clearheaded and sure he was simply very curious. But I had to be prepared. With the tree in my hand, he seemed to be content with staying 10 to 15 feet away.

At this point, I thought that perhaps I was in his territory and if I slowly walked away, he would eventually depart. I was also becoming more concerned about how much light I had left (although there were still two parties and a dog behind me). With that, I turned slowly, with tree in hand, and headed down the trail. The cat predictably followed, staying 15 to 20 feet behind me. He kept me in sight, running to catch up should I round a bend where he couldn’t see me.

This continued from the point of encounter (five to 10 minutes from the lake) until I could hear the roar of Avalanche Creek. As I came down an incline, I noticed he had stopped in the trail and was washing his face with one giant paw. He seemed almost bored as he turned and walked slowly up the hill. I watched him until he got to the top, where he stopped and looked back. We then headed in separate directions. I actually rather missed him after he’d gone; however, I kept constantly vigilant to make sure I knew where he was (or wasn’t).

Throughout the experience, I had remained calm, deliberate, and clearheaded, although I was nervous and concerned when the cat approached to within six feet. I didn’t actually feel shaky until I was relating this experience to University of Montana professor Riley McClelland, by phone, from the Glacier Highland Motel. It’s always interesting to note personal reactions to different situations. The fact that I chose to mimic other animals instead of yelling (or singing, as one ranger did) is interesting and perhaps even humorous. However, I feel the mimicked noises only intensified the cat’s curiosity.

My only real concern at this point is for the cat—hoping that nothing will happen to him and that he isn’t sick or conditioned, but merely curious.—Lynn Kelly, president, Flathead Audubon Society

and volunteers tally the number of raptors seen while driving the routes.

A really serious birder may wish to conduct a breeding bird census or a winter bird population study. These activities, like the CBC and BBS, also come with their own highly structured methodology to ensure that results are

studying certain groups of birds, and the really serious birder is limited only by inventiveness. Janet Ellis studied nesting swallows by excavating an enormous tunnel behind the bank in which they were nesting, then spying on the nests literally through the back door. Clif Youmans, Jon Swenson, and Steve Knapp pioneered a method of censusing owls by playing tape-recorded calls during dusk-to-dawn censuses. They censused the cottonwood forests

along the Yellowstone River near Hysham, and found that owls lived there in densities no one had dreamed of—up to a dozen great horned owl territories per square mile and two or three eastern screech owls per square mile.



Great horned owl

comparable among years, areas, and observers. The objective is to determine exactly how many birds inhabit a certain plot of ground—say, 20 acres. In the case of breeding birds, one tries to count the number of territories present on the plot; in the case of winter birds, one simply documents the average number present per visit or per hour. Relatively few censuses have been conducted in Montana, probably because they are time consuming and, frankly, quite a lot of work. One must first carefully survey, stake, measure, and describe the chosen plot of habitat to be censused, then revisit it at least eight times, precisely mapping the locations of all birds seen and/or heard. When censusing breeding birds, one must be acutely aware of bird behavior, too—males defending a territory boundary against an intruder, females carrying food or fecal sacs, nest defense behavior, and so forth. But the results, once properly analyzed, provide just about the best documentation there is of bird densities and abundances.

The champion bird census-taker in Montana is Marcie Bishop of Polson. For 11 years, Marcie has carefully censused a remarkable area along the shore of Flathead Lake, a quiet marsh surrounded with coniferous and deciduous woodland. Marcie had documented breeding territories of up to 65 species on this 100-acre plot, and during several years, Marcie's plot has harbored more species of birds than any of the hundreds of similar censuses conducted around the country. Marcie looks forward to her annual census eagerly, even after more than a decade of study. There's always something new, with adventures every year—like the encounter with an osprey that defended its nest so fiercely that Marcie was literally trapped between two trees for 45 minutes.

There are, of course, many specialized techniques for



Common loon

The personal inconveniences which raptor enthusiasts will suffer in order to more intimately know their quarry are legendary—there are tales of biologists spending 24 hours or more in a cramped plywood blind next to a golden eagle nest during the heat of summer. Serious injuries while climbing cliffs or trees to nests are not uncommon. These types of investigations are more properly called “scientific investigations” than “birding” and few amateurs choose to undertake such studies.

Nevertheless, amateurs can and do make valuable scientific contributions to the study of Montana birds, and it is good to know that any level of participation—from casual listing to serious censusing to intensive behavioral study—is open to everyone. Remember, the sky's the limit! ■

READERS RESPOND

Rock Creek Bull Trout

Thought you might like to have a picture of a big Rock Creek bull trout I caught on June 9, 1985. The fish was 30 inches long and weighed 11-plus pounds. I took him on a No. 4 Chuck's Stone Fly (dry) on a four-pound tippet.

My son Sean is holding the fish.—*Gary E. Eudaily; Missoula, Mont.*



Snappy Rejoinder

I know most fishermen will relate to the snappy rejoinders you get when you ask one of the natives, "How's fishing?" or "Are they biting?"

The one that sticks in my craw was on an excursion to a lake recommended by a mutual friend.

My buddy and I threw everything in the tackle box at them with nothing to show for our efforts but an undersize northern and a couple of small bass.

We decided after four hours it was time

for a tall cool one so we beached the boat and hit the local pub.

When the bartender brought our beers I asked, "Say, are there any fish in this lake?"

Without a change in expression he said, "Must be, I never see anyone take any out!"

Love your magazine.—*Raymond Bell; Milwaukee, Wis.*

Montana Impresses

Having visited your state not too long ago, to see a friend and relative who live there, I am very interested in Montana as a place to retire to in about three years.

The high cost of living in this area dictates that I leave, and since I am a great lover of the outdoor life, especially the mountain country, I'm very impressed with what I saw on my short stay in your state.

I hope your magazine will further increase my knowledge of your state.—*Paul Kunkel; Palmer, Alaska*

Another Big One

I have a subscription to your magazine, and I think the photographs and articles are excellent. I am sending this picture hoping that you may fit it into one of your issues.

I caught this 34-pound northern pike on Memorial Day weekend at Tiber Reservoir. It took about 30 minutes in order to get it into our 16-foot aluminum boat. I was using 8-pound-test line, steel leader, and a yellow Mister Twister with a chunk of worm for bait.—*Dan Monaco, Missoula, Mont.*

Ethics Overlooked

Regarding the recent article by Keith Szafranski, "Capturing Nature With a Camera" (May/June 1985), I was disappointed.

Mr. Szafranski did a fine job of providing a basic overview for the mechanics of wildlife photography. However, he left out a major point. Nowhere in his article did he mention the ethics of such photography. Wildlife photography can be both a benefit and a detriment to wildlife, depending on who is behind the camera.

I think that we, as photographers, have to first decide whether the disturbance to the animal is worth the photo. If we decide that it is, then we are obligated to minimize our disturbance while getting the photo. Ethics should be the first consideration of anyone who is photographing wildlife under the pretense of admiration.

I was somewhat surprised that these points were excluded from an article in your magazine; I thought your standards were higher than that.—*Robert Bennetts; Missoula, Mont.*

Needs Back Issues

Will you please include this article in your "Readers Respond" section?

Wanted to buy, back issues, early 1970s, 1971, and 1972 of *Montana Outdoors*. Need ten for a complete collection.—*L.E. Scovel; 110 Meridian Road, Kalispell, Mont. 59901.*



Float the Beaverhead River in the middle of December? You must be out of your mind!"

The voice on the other end of the line belonged to Ed Grogan, my No.1 fishing partner. "I talked to a rancher from Dillon today," he exclaimed. "There's a heck of a big flight of northern mallards on the river. The best way to get close enough to shoot at 'em is to float up on 'em."

Ed and I both had purchased six-man Navy surplus life rafts which we used to float many of Montana's rivers during the summer fishing season. Floating during the warm summer months, however, and hunting ducks in near-zero weather were two different things.

I heard Ed's horn honk shortly after 5:30 a.m. The thermometer beside the front door of my house stood at minus 2 degrees, and I thought to myself: "You don't have to be nutty to be a duck hunter, but it helps."

It was necessary to drive two vehicles on this float trip, as we were to drop off one car at the place we'd pull the boat out of the water at the end of the trip. Our float was to begin just north of Dillon and take us through a winding seven miles of river bottom.

The Beaverhead River, one of the finest trout streams in Montana, eventually merges with the Big Hole River to form the Jefferson, one of the three forks of the Missouri. From 25 to 50 feet wide in most places and with many deep holes, the Beaverhead is an ideal resting area for migrating ducks on their way south.

The river's winding nature makes it perfect for hunting from a raft, since the birds can often be surprised as the boat rounds a bend.

As we inflated the raft, I remembered that on our last float trip one of the boats had leaked air quite badly, and we were forced to hand pump it through most of the trip. I sincerely hoped that the boat we were using today wasn't the leaky one. This rationalization later proved to be our downfall.

We loaded shotguns, lunches, and thermos bottles of hot coffee into the raft, and got under way. I took the first

shift with the shotgun while Ed manned the oars. We hadn't been floating 10 minutes when I looked downstream and saw them. There must have been 25 ducks feeding just off a sandbar. "Get ready," I whispered, "a bunch of mallards just ahead."

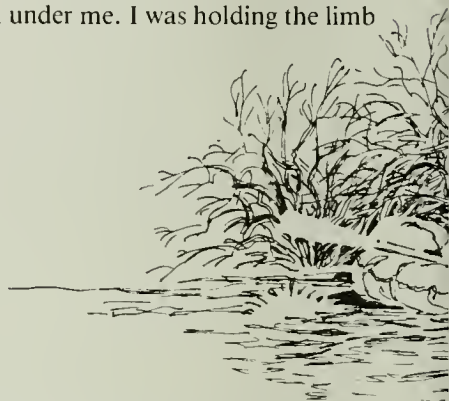
"Just shoot the greenheads," he answered. We had agreed several years earlier to try for only male birds for conservation reasons. The words were no more than spoken when the birds got up just out of range. We watched as the flight swung away from us and headed farther downstream. "That's okay," Ed exclaimed, "we don't want to fill our limits too soon!"

As the day went on, we had exciting shooting—so good, in fact, that we paid little attention to the buoyancy of our craft. I had noticed, however, that the raft seemed to be getting more pliable and harder to control. As we slowly rounded yet another bend in the

river, a dozen mallards rose in a spray of water and raucous quacks. When the shooting was over, we had three birds down in the water. Two were dead, and the third was swimming for the safety of the overhanging willows along the bank.

We had turned the boat and headed into the current to intercept our quarry when it happened. My earlier feeling that the raft was slowly losing air was correct, and as we drifted into the willows, I grabbed at an overhanging limb to push us back into the main current. In a flash, our underinflated raft folded up like a "V" and water poured in over the sides.

"Let go!" Ed yelled. But before I could react, the raft had floated out from under me. I was holding the limb



Safety Tips For Cold Weather Floating

Floating Montana's rivers during cold weather can provide great recreation for outdoorsmen. But as the account on these pages illustrates, it can also be dangerous. One of every two water-related deaths occurs outside the summer season. The cause of death for victims who fall into cold water is often not drowning, but hypothermia—a rapid and drastic chilling of the body core. Hunters and fishermen should heed the following precautions:

- Pay close attention to weather forecasts.
- Tell a friend or relative where you are going and when you expect to return.
- Wear a Coast Guard-approved life jacket adequate for your weight.
- Make sure your boat is in good working order.
- Don't overload your boat.
- Carry extra clothing and survival gear in a waterproof bag.
- Carry waterproof matches on your person.

in my left hand and my shotgun in my right. The cold water was numbing as it poured in over my hip boots. I was barely able to pull myself into the willows with my left hand, and although the water was chest deep, I was safe for a few moments.

At least I was out of the main current. I glanced over my right shoulder back to the river to see Ed still in the raft, which was traveling slowly downstream, making complete circles as it went. Although the craft was almost completely full of water, it would still support one person without sinking.

It seemed that Ed was attempting to navigate the water-filled raft into a shallow spot where he could wade to shore. In an instant, however, Ed and the boat were lost to view as a bend in the river obscured them.

I was half frozen by now, and rapidly losing my grip on the overhanging branch. I had to do something quickly or risk having the current pull me back



Cold Bath in the Beaverhead

by Neil Cantwell
illustrated by Diane Nugent

into deeper water. With all my strength, I tossed the shotgun as far toward shore as I could, more concerned now with my own skin than with the gun. By now I had been in the near-freezing water for several minutes and my legs were growing numb.

With both hands free, I began laboriously pulling myself through the willows to the river bank. I grasped weakly at the frozen soil along the bank, seeking anything to pull myself out of the icy water. Then just to my right I saw a rotting fence post, half submerged in the mud and ice, but it looked sturdy enough to give me some leverage.

I would have to grab it with both hands, as I was by now too weak to pull myself out with only one hand. If I

missed the post, I probably would not make it out of the river. With a desperate lunge, I grabbed the post, first with one hand, then the other. Painfully pulling myself up on the bank, I lay there too weak to proceed any farther.

Gasping for air, my legs still in the water, I lay shivering on the river bank, wondering if I could take the cold any longer. Finally, with teeth chattering and breath coming in sobs, I crawled slowly up onto the bank. Although safe for the moment, I was soaking wet in subfreezing weather, still several miles from my vehicle, and with no idea of what had become of Ed.

Slowly tugging at my frozen boots, I finally got them off, dumped out the water and ice, and attempted wringing out my woolen socks. By now my hands were too cold to work properly, so I shoved my feet back into the boots and staggered downstream.

Now that I was safely out of the river, I was concerned about Ed. I was worried that he might have had to leave the half-submerged raft and try to swim out. In this weather and with our heavy clothing, swimming would have been next to impossible.

I stumbled along the bank, walking as fast as possible. The exertion was restoring some heat to my half-frozen body, although most of my clothing was still stiff with ice. As I rounded a bend, my eye caught sight of the yellow raft and crouched there beside it was Ed.

I yelled to him while I was still several hundred yards away, and we met and embraced some 100 yards from the boat. Chattering and pounding each other on the back, we acted like a couple of teenagers gone berserk. "We just about bought the whole package that time," Ed chattered through clenched teeth. "I had given you up for a goner. I was going to try to make it into town and call the sheriff. How did you get out?"

I described my close call to him, then asked him how he had been able to beach the partially submerged raft. Ed had been lucky, too. The raft had held enough air to allow him to row it into shallow water, where he bailed out and horsed the raft up on the bank.

We used Ed's waterproof matchbox, and soon had a roaring fire going. After drying out somewhat, I went back and retrieved my shotgun, then we took stock of our miserable situa-

tion. We had saved nothing in the boat, including the hand pump, which had broken loose. The raft was now useless, so we left it on the bank, gathered up our guns, and started downstream toward my vehicle.

It was well after dark when I got home, and my wife remarked, "You look beat. How did the float trip go?"

"Aw," I said, "you've seen one river, you've seen them all!" ■

Turnaround at Fort Peck *Reservoir continued*

sandy soil types surrounding much of Fort Peck. Plants that start to grow on exposed shorelines near the water usually don't live very long because of heavy wave action. Biologists believe the reservoir should be substantially lowered every few years to allow vegetation to establish on previously flooded ground. The best situation following a low water level would be a gradual step-like filling in succeeding years to inundate the lower vegetative zones. Northern pike reproduction could be greatly improved if the water level was raised early enough to accommodate the northern's spawning period; later-spawning species dependent on flooded vegetation would also benefit.

However, manipulating water levels in a large reservoir for any one purpose is not easily accomplished. Many influences come into play, including mountain snowpack and runoff, precipitation amounts, current reservoir level, power production, and downstream needs for irrigation and navigation. These factors and others must be considered in overall reservoir management. Fort Peck and several other downstream reservoirs on the Missouri River are regulated by the Omaha Division of the U.S. Army Corps of Engineers at the Reservoir Control Center in Omaha, Neb. Here the ultimate decisions are made regarding management of the Missouri mainstem reservoirs.

Over the years, biologists from the Dakotas, Nebraska, and Montana and personnel from the Reservoir Control Center have met many times. They have exchanged information on current fisheries programs and regulations on the various reservoirs. Also discussed are proposals to enhance fish

reproduction through managing reservoir water levels. Until 1985, such proposals for Fort Peck were considered by the corps, but were not implemented. Above-normal inflows, excessive loss of power revenues, or unbalancing downstream reservoir regulation were a few of the reasons why.

But in 1985, the Montana Department of Fish, Wildlife and Parks proposed holding the projected spring rise to a minimum. This would allow water levels to continue to recede or at least to remain low until the following spring when the reservoir again would begin to fill. Vegetation would once again grow naturally on the exposed shoreline.

The corps seriously considered the proposal and decided this was an opportune time to try and initiate the plan. Spring reservoir levels were low in Fort Peck, and projected inflows were much below average. A change in normal operation of spring release patterns, coupled with extreme low inflows, has produced the desired effects. The reservoir receded approximately six feet by the end of August and is expected to drop several more feet by next spring. Much shoreline has been exposed, and vegetation has appeared in some areas, particularly in the more protected sections and at the heads of bays. Unfortunately, plant growth was hampered by a dry June and July, and intensive livestock grazing further limited growth along some shoreline areas.

In a few areas, corps' personnel from Fort Peck have broadcast seeds such as sweet clover, western wheatgrass, canary reedgrass, and others on the exposed shoreline. Planted in late fall, the seeds should begin to sprout next spring as the reservoir begins to rise. The result will be improved vegetative cover—in time to provide spawning and rearing habitat.

The department, Walleyes Unlimited, and other interested sportsmen recognize the Corps of Engineers' positive efforts in trying to manipulate water levels in Fort Peck to benefit fisheries. The corps' responsiveness and increased level of help and concern toward solving the reservoir's fishery problems is highly commendable and sincerely appreciated by all who enjoy fishing northeastern Montana's "crown jewel." ■

“Fourth Season” Campout

by Doug Monger

The darkness of night still surrounded me as I forced the words out: “How cold is it?” Silence.

Maybe I really am still asleep. Maybe this is just a dream. “How cold is it?”

“Mumble, mumble, huh?” grumbled my tent partner from his sleeping bag.

Rousing myself from the warm cocoon, I tried one more time: “How cold is it?”

“Too!”

“Too? Too what?”

“Too cold. It’s your turn to start breakfast. Call me when the drinks are hot.”

Summoning my courage, I struggled into my clothes while trying not to touch any bare skin to the frosted sides of the tent. This was the fourth day of an extended winter camping trip—and it *was* my turn to prepare breakfast.

Before each of my winter trips, someone invariably asks me a standard and consistent question: Why would anyone want to go out in midwinter with the optimistic idea that staying



GEORGE WUERTHNER

warm and dry in the wild is possible for more than one day at a time, much less for a night or two?

Just how should I tell someone—who hasn't experienced the beauty that winter brings to the wild lands of Montana, who doesn't know the solitude that can be found only after winter's white fleece has fallen, who hasn't faced the challenge of exercising skills—that the reward is a renewed sense of competence and accomplishment? Of course, I can't tell anyone this and still be believed, so I go into an explanation long enough to make everyone wish the question had never been asked.

My story about getting started with winter camping reaches back to a time when I believed anything was possible. The story involves adventures ranging from the sublime to the unbelievable. Such as the three-day trip when a friend and I skied for what seemed like forever at 25 below zero. At the start of the third day we were too exhausted to continue breaking track to make our destination, so we turned around and skied out 14 miles the way we had come. We found out later that we had turned around only ½ mile from a groomed ski track and only two miles from the end of the trail.

At first, the *experience* of winter camping was good even though my performance wasn't. As my experiences broadened, winter trips became more enjoyable, and I reaped more benefits. Most of us didn't start our outdoors experience by hiking the length of Montana or doing a winter ascent of Granite Peak. Rather, we started slowly, probably spending our first night out in an army surplus sleeping bag beneath a grease-stained tarp on Grandma's covered porch. Winter camping is the same way.

Planning. New adventures take getting used to. On your first couple of winter camping trips, plan to stay out only a night or two and stay fairly near the security of the trail head. The long and relatively warm days of late winter and early spring are excellent times to try this "fourth season" sport. You'll want to pick a time for your first winter camping trip when the weather is decent. Don't be afraid to cancel a trip when the red in the thermometer dips out of sight. It's a lot more fun to be out when it's sunny and 20°F than when it's blowing and 20 below, and the name of the game is having fun.

PIETER KAGAN



Most of the items required for winter camping—a good sleeping bag, a lightweight tent, and a stove that burns white gas—are probably on hand from summer outings.

Adequate planning also means checking the map and travel conditions to ensure the trip you've planned is feasible. If we would have bothered to do some checking before our 25 below trip, we would have realized the groomed trail existed. But maybe even more important, we would have found out our destination was 2,000 feet higher than our starting point and if done in reverse direction, we could have skied downhill most of the way.

One of the main ingredients in making a winter trip fun is to be warm. Most of us have only two methods available for keeping warm: We can absorb warmth, or we can generate it. To absorb warmth, we need an outside heat source such as a fire, the sun, or a hot spring. These are all excellent heat sources, yet they become a bit cumbersome to haul down a trail, or they are not the most reliable (just try locating a hot spring in the Bridger Mountains or finding the sun in a snowstorm). The other alternative is to generate heat from within, and keeping our metabolic furnaces burning requires food.

Food. To the delight of most winter travelers, it is a good idea to constantly feed our furnaces. Begin the day with a hot, nutritious drink. Coffee or tea is fine, but I prefer one of the thick 'n' sweet drinks found on the grocer's shelf, such as an Ovaltine/coffee mixture. These seem to add more "oomph" to my morning.

Breakfast is a good time to stock up on fluids and carbohydrates. Your body requires almost as much water during winter camping as it does in the

summer, so keep your fluid intake up. Warm drinks provide the body with fluids as well as warmth in the morning. "Carbos" digest rapidly and provide lots of energy. Grandma would be proud to see my steaming bowl of instant oatmeal replete with brown sugar and a big glob of butter—with a few raisins mixed in to add a dash of cheerfulness. If you don't enjoy oatmeal, try a granola, fruit, and nut mixture covered with hot milk.

I constantly nibble on trail goodies to keep the internal fires going. I rarely stop for more than a cup of warm cocoa at lunch since I've been nibbling all morning and usually like to take advantage of the precious daylight.

During late afternoon at the campsite, the cook gets the hot water boiling for a quick pick-me-up before dinner while the others set up camp. For simplicity, dinner is usually a one-pot meal. After a long day on the trail, even the most basic glob tastes great, with proper seasoning, of course. Dehydrated stews or chilies that outdoor stores sell are great, if you can afford them. If not, you might want to try my one-pot stand-by recipe. Start with a powdered soup mix. After it's boiling, toss in what you have handy—cheese, meat, nuts, grains, noodles, jerky, and of course a healthy serving of butter to keep one's craving for fats satisfied. Dinner is a good time to take in fats and proteins. These take a relatively long time to digest and will give your furnace long-lasting fuel for the long winter night. After dinner, and before bed, consume additional hot, nutritious drinks. Meals on a winter trip can be just like those on your summer trips. But just remember to keep them simple—and keep them coming.

Clothing. Even the most powerful of human metabolic furnaces needs a little help preserving its generated heat, and this usually comes in the form of clothing. If you're a hunter, snowshoer, or cross country skier, you probably already know the basics. Dress in layers; increase or decrease layers as you produce more or less internal heat. If you get too hot, your insulating layers of clothing can become damp from perspiration. Modern advances in material blends and synthetics have all but removed those itchy old longhandles from store shelves. Today the winter recreationist has a choice of soft non-itch wool long

underwear, pile or polypropylene. I prefer the polypropylene; it comes in different weights, dries quickly, insulates even when wet, and comes in a variety of colors. On trips, I carry one set of lightweight and one heavyweight and choose between them or wear both, depending on weather conditions.

A pair of tight-weave woolen pants go over your long johns. Rarely do conditions warrant heavy "Malone" wool pants. They are better left for ice fishing when you don't have to carry around all that weight or worry about keeping snow off them. If the wind is blowing snow, or I'm digging a snow cave, or out playing in fresh powder, I slip on a lightweight rain suit or water repellent nylon shell pants and jacket. Both keep the wind out, and I stay dry. Unless it's very wet, I rely on my wind shell and spare long johns for back-up protection; thus, I don't have to carry the extra weight of spare pants.

Going down the trail with a pack on requires very little clothing to keep my upper body warm, usually just a turtleneck and a wool shirt. When at camp or taking a break on the trail, keep a sweater and down vest handy.

Since the feet are one of the body parts most susceptible to cold, a sturdy pair of boots becomes an invaluable investment that pays dividends on each trip. Of course, the type of boots you use will depend on your mode of winter transportation; however, boots should be large enough to accommodate two pairs of socks, one light pair next to your skin to "wick" away moisture and one heavier woolen pair for insulation. I carry two spare pairs of socks in my pack. Boots should shed water and snow, and should be well broken in. If you have a pair of leather boots suitable for winter day excursions and you'd like to extend them into the realm of overnight outings, try slipping an old pair of woolen socks over the outside of them—yup, right over the boots. This will add another layer of insulation while affording additional protection from ol' Mother Nature's elements.

I wear waterproof nylon shell mittens over a pair of lightweight cross country ski gloves. For more warmth, I carry a pair of heavy woolen mittens.

For evening around camp, a parka over dry trail clothes is usually enough to keep one warm. No winter camper should be out without a hat that pro-

GEORGE WUERTHNER



The long and relatively warm days of late winter and early spring are perhaps the best time to try your first winter camping trip.

TECTS both ears and neck.

Gear. Before heading out for a winter trip, be sure your gear is in good shape; take appropriate parts along to replace those that might break along the way. Most of the gear required for winter camping is probably on hand from summer outings. The sophistication of your equipment may progress as you venture out into the winter arena, but it is not a necessity. The beginner can usually enjoy an outing with what's on hand.

You can obtain a warm night's sleep just as effectively with an expedition down winter bag (that will probably be unzipped most of the night) as you can with two light summer bags, one inside the other. The insulation material of a sleeping bag is strictly a matter of price and personal preference. Down bags are warmer per weight unit than syn-

thetic bags and stuff smaller; however, they are quite expensive, difficult to care for, and provide little, if any, insulation when they become wet. Sleeping bags with synthetic fillings (such as Hollofil, Quallofil, or PolarGuard) are heavier than down, are a bit less expensive, and they provide some, albeit marginal, insulation when they get wet.

Regardless of its filling, it is important to keep your sleeping bag dry. Because of the moisture in your exhaled breath, do not sleep with your head inside the sleeping bag. In eight hours, you exhale air that contains about a half cup of water. Instead, keep your head warm by wearing a hat to bed.

When you exit the bag in the morning, squeeze all of the warm, moist air out of it. This will prevent the moist air

from condensing and then freezing in your bag. An insulating ground pad is important because you can lose a great deal of body heat to the ground. Closed cell foam pads, such as Ensolite, are comfortable, inexpensive, and won't soak up water like a sponge.

One item not utilized by all summer campers is a stove. In winter, a stove is constantly used in melting snow for water, heating drinks, or preparing meals. For winter camping, choose a stove that's lightweight, has a pressure pump, and burns white gas. Stoves burning a variety of fuels are available; however, many don't function well in the cold or the type of fuel they use is not universally available. White gas is.

The winter explorer has a choice of internal or external frame packs. Either will suffice, but if you are choosing a pack primarily for the fourth season, you should pick an internal frame. Internal frame packs carry the load closer to your body and thus give you better balance. They don't interfere with body movements, such as the swinging of ski poles. Because all of your gear is inside, an internal frame pack offers more protection from the elements. Also, because it rides closer to your body, it adds another element of insulation.

Most winter camping tents are merely heavy-duty versions of counterparts used during the other three seasons. They may have added features such as snow flaps, a cooking hole, or a tunnel entrance. These features are not necessary for winter and, in fact, often add more weight and expense than can be justified. Because of the difficulty of placing tent stakes in snow, the only feature I require of a winter tent is that it be self-standing. These tents usually have fewer guy lines, and thus require fewer tent stakes. I use a heavy stick as the stake, press the stake and the guy line under the snow with my foot, and then pack more snow on top of them. If heavy sticks are not available, skis, ski poles, or snowshoes can serve as tent stakes.

In camp. Now that we've got your furnace all fired up and your body insulated, let's take a look at what goes on as we near camp. With about two hours of light left in the day, begin looking for a good campsite. A camp can be placed almost anywhere, but a *truly comfortable* camp is something to behold. An ideal site would be out

of the wind and so located as to catch the first warming rays of the morning sun. It should be near a stream so you don't have to use time and energy to melt snow into water, and located on a small bench up and away from the cold air that settles in creek bottoms and low spots. This perfect camp site should have abundant wood for fuel, but it should not be near leaning tree snags that could fall on you as you sleep. It should have a gentle slope leading into camp on which to play, and, of course, it should have a natural hot spring nearby.

Once you select a site, the cook fires up the stove for the evening drinks and dinner, as the rest of the party goes

get out the shovel (the one you always carry in case of avalanche) and dig a trench in front of the tent to make boot removal easier; you might even dig chairs and a kitchen table out of the snow. After the tent is pitched and the sleeping bags are laid out on their insulating pads, camp is set. Now comes the time to slip into down booties or mukluks, to pull on that spare sweater, grab a cup of something warm, relax, and dissolve into the quiet winter world. After dinner, as the long winter night and a day of exercise on the trail coaxes you into the warmth of the sleeping bag, light your candle lantern, pull out a book, and enjoy some leisurely reading.



Pack down the tent site first wearing skis or snowshoes, then with your boots; this will ensure that you won't sink into the snow as you sleep.

about making camp. Choose a spot for the tent. While still in trail apparel, pack down the tent site first wearing skis or snowshoes. Then remove your skis or snowshoes and "boot pack" the tent spot. After the boot packing, put your skis back on and pack and level the site one final time. Allow the site to "set up" for about half an hour before pitching the tent. This assures that you won't sink into the snow as you sleep during the night.

If the camp is located where fires are allowed, gather fuel. Either shovel or pack down a path to the water supply and establish a path to the latrine area (when using the latrine, please strike a match to your paper; come spring, you will have left no trace of your camp).

To make camp truly comfortable,

As you gain experience camping in the fourth season, you will discover many tricks of your own that will make your trips more enjoyable. You will find new ways to make every camp the perfect camp. By becoming more accustomed to what winter has to offer, confidence in your abilities will grow. Winter camping gives one a rare chance to get away from the pace of today's society and feel the solitude that is such a part of our heritage. After a few low-key winter trips, you, too, may find yourself addicted to the fourth season and doing your best to explain to others why you enjoy it so. After all, it's just summer camping without all those inconveniences—mosquitoes, snakes, and lots of other campers. ■

Big game damage in Montana is a squeaky wheel with lots of spokes. At the hub is game damage itself, and what some people perceive as a growing intolerance for it. The spokes are the many elements affecting the issue. At the rim are the landowners, sportsmen, and other wildlife advocates looking down the various spokes at the problem and expressing a score of opinions about whom should do what. If the wagon of wildlife management is to go forward at a steady pace, we need to tend to the wheel. It's possible the squeak has become a permanent, although irritating, part of the wagon.

Biology

To alleviate game damage, a wildlife manager must confront the two most powerful forces in nature. The first is the absolute drive to reproduce and maintain fitness for reproduction, and the second is the physiological need for regular sustenance—the fats, proteins, carbohydrates, and minerals essential for life. These two forces explain why animals migrate, why predators kill, and why browsing and grazing animals can destroy their habitats.

Deer and elk will reproduce and eat until their populations are brought in check by some environmental factor. In the wild, the limiting factor is usually the quality and quantity of food available on a herd's limited winter range. This wintering country usually amounts to about 15% or less of the land used during the summer. Almost always, the animals concentrate in the lower foothills and valley bottoms where there is less snow, vegetation is richest, and there is protection from wind and temperature extremes. As a wild population's nutritional state deteriorates, the animals become more vulnerable to parasites, diseases, predation, death by starvation, and there is lower production and survival of young.

Modern wildlife management aims at producing a sustained annual crop of wild game for recreational use. It attempts to keep big game populations at their most productive by keeping populations within the carrying capacity of the winter range. Hunting is substituted for the environmental con-



GAME DAMAGE:

story and photos by Mike Aderhold

trols of disease, predation, and starvation.

During the first 25 years of wildlife management in Montana, from 1940 to 1965, much time, money, and energy was spent assessing and monitoring condition of the winter range. Biologists periodically checked shrubs and grasses for health, production, and game use. They "got good" at reading these signs and tried to keep big game populations below what the

plants could support.

While wildlife managers have been watching the vegetation and building up the big game populations, they have become increasingly aware of another limiting factor: the amount of game damage on agricultural crops, and the related tolerance of ranchers and farmers. Often, this constraint "kicks in" before the condition of available wild foods declines. Unfortunately, wildlife biologists are not yet as good

at reading this limiting factor as they are in assessing range condition.

Winter weather, range conditions, and human values, perspectives, and tolerances are not the only elements in the equation. Wild animals are adaptive. They often respond to fresh opportunities and new conditions by changing foods, feeding habits, range use, and the timing and pattern of their migration. More and more, the Department of Fish, Wildlife and Parks (DFWP) is receiving game damage complaints in seasons other than winter and complaints *not* a result of more animals.

The Law

Another problem is the public's perception of the state's responsibility. Legal discussions of game damage in Montana usually begin with a review of two State Supreme Court cases: State vs. Rathbone (1940) and State vs. Sackman (1968). Both cases involved ranchers who shot elk on their property after complaining to the state and after receiving a response from the state wildlife department they felt was inadequate. In both cases, the landowners cited their rights under the Montana State Constitution (Article 3, in both the 1889 and 1972 versions) to acquire, hold, and protect their property.

In both cases, the Supreme Court held that their constitutional right was conditioned or limited by the fact that the citizens of Montana have determined that game animals are of great value and have passed laws to protect them. These laws limit the time, manner, and number of animals that may be taken. The purpose is to assure that a viable population of game animals is maintained.

In limiting a person's ability to kill animals at will, the people of Montana precluded one of the options formerly available to private landowners to combat game damage. It should be pointed out, however, that killing animals is only one of several options historically available to the landowner.

In both cases, the Supreme Court said: "Montana is one of the few areas in the nation where wild game abounds. It is regarded as one of the greatest of the state's natural resources, as well as a chief attraction for visitors. Wild game existed here long before the coming of man. One

who acquires property in Montana does so with notice and knowledge of the presence of wild game and presumably is cognizant of its natural habits. Wild game does not possess the power to distinguish between *fructus naturales* (wild food) and *fructus industriales* (domesticated food) and cannot like domestic animals be controlled through an owner. Accordingly a property owner in this state must recognize the fact that there may be some injury to property or inconvenience from wild game for which there is no recourse."

Legally the responsibility for and the expense of protecting private property is with the owner of that property. However, if the people in some way limit the ability of a private landowner to do that, they incur some responsibility to assist. The acquired responsibility of the state, therefore, is not to ensure that landowners suffer no damage or depredation from game animals, but rather to try and protect landowners from situations where such damage has reached a high level.

In the Rathbone case, the Supreme Court said that at some point, in severe damage situations, where the state's resources have been exhausted and the response is not effective, a landowner has a right to protect his or her property and there may be justification for killing game. Historically, this case is interesting because it had a lot to do with the later purchase of the Sun River Game Range and other prime elk wintering areas where game damage was a recurring problem. It was also significant in DFWP's decision to hire a staff of professional biologists to take a closer look at big game populations and their available habitat.

In the 1968 Sackman case, the Supreme Court reversed a lower court judgment requiring the state to issue kill permits and awarding Sackman about \$2,500 in damages, court costs, and attorney fees. The higher court found the damages claimed by Sackman were not substantiated and that "injury to property by wild animals must be of considerable extent to warrant killing out of season or contrary to law." The court said the state had done a commendable job in inspecting the damage and trying to assist the rancher. It held that government in this case had functioned for the public at large and this incidental

injury, coupled with the extent of the damage and the facts that the rancher could have done more to lessen his loss and had closed his ranch to hunting, gave him no claim on the state.

Montana's current game damage policy is based on state law 87-1-225, which has roots extending back 50 years but which also embodies the two Supreme Court decisions. That law says that on receipt of a big game complaint, employees of the Department of Fish, Wildlife and Parks: "shall investigate and study the situation with respect to damage and depredation." The Fish and Game Commission "may then decide" to (1) open a special season; (2) destroy the animals; or (3) "may authorize...permission to kill or destroy a specified number of animals...."

Farm Situation

The agricultural situation in Montana has changed dramatically in the last 30 years. Thomas Jefferson's idea of a strong democracy based on the family farm is no longer possible. Small farms, for the most part, do not have the resources, reserves, or productive capacity to compete or take the bad years like the large corporate farms. It's a fact that many farmers are no longer operating a workable economic unit.

Add to this the high inflation of the 1970s, weak markets, slipping land values, and the increasing costs of labor, borrowing money, and buying equipment, fuel, fertilizer, feed, and electricity. Match these with selling prices that have not kept pace and it's easy to see why small land managers are disturbed, even before the addition of game damage problems. Add encroachment by noxious weeds, challenges to the use of herbicides and pesticides, grasshoppers, several years of drought, and continued decline in prices because of agricultural success elsewhere and you have a strained industry going through a very difficult period of adjustment. Bring on record deer, antelope, and elk numbers in many parts of the state—and the situation is ripe for conflict.

From a wildlife perspective (especially in the western part of the state), Montana has lost some big game habitat right where it's needed the most: in the valley bottoms and foothill areas. Urban sprawl and in-



Controlling wildlife populations through sport hunting is the most effective and practical method of solving game damage problems. Permanent fences work well at times, but costs are justified only for protection of high-value crops over long periods. Chemical repellents usually reduce the problem only temporarily.



creased roading and development of all kinds have caused wintering animals to seek new feeding areas. Sodbusting and intensive farming aggravate the situation. Down on the farm, there is simply more competition for what the land can produce.

Another complicating factor is the rapidly changing pattern of land ownership around our cities and towns. Large farms and ranches are being divided into smaller parcels and sold to people who do not make a liv-

ing from the land. The newcomers are usually those with jobs in town or retired folks; both long for a little peace and quiet and a bit of the natural life. These people have a far different perspective on private property rights, hunting, public recreation, game numbers, and what constitutes game damage. The resulting differences of opinion often develop into a "people problem" that is as tough to deal with as the "game problem."

What Can Be Done?

Bob Brannon, a department biologist working on the Grizzly Environmental Impact Statement, was commissioned in 1984 to review the literature on game damage and pull together the various techniques available for control. He collected 68 articles written between 1949 and 1983. He found that all damage control practices fit into seven categories: (1) population control, (2) exclusion, (3)

cultural methods, (4) repellents, (5) attractants, (6) removal, and (7) compensation.

From a wildlife manager's perspective, population control through sport hunting is the most effective, practical, and inexpensive technique. It is the necessary first step if any of the other methods are to succeed.

Crop damage is often, but not always, related directly to game density. Damage is intensified on fertilized crops and by dry weather, heavy snows, and low quality or poor supply of native forage. The best solution is to keep big game in balance with its natural habitat.

To do this with sport hunting, the harvest regulations must be liberal, hunters must have access to areas where damage is significant, and the accent must be put on harvesting the females in the population. Landowner cooperation is an essential element of population control.

The common mistake in population control is focusing on too small an area or just taking animals from the damage site. All big game animals are capable of foraging over a large area. In some instances, if just a few animals are killed, others will soon take their places; however, in other cases, some of the worst problems are caused by only a few individual animals. In Pennsylvania, kill permits were given to landowners year after year, and still crop damage continued. The reason was the overall population was not affected by loss of just a few individuals.

Of the other methods, use of attractants, removal, and compensation all run a good chance of confounding the problem or creating a more serious situation. Chemical repellents and cultural changes are only temporary solutions, but often enough to handle a situation brought about by unusual climate or a problem that lasts just a few weeks. Fencing to exclude animals is very expensive, but it works and in the long run can be cost effective in certain situations.

Some permanent fences are effective in controlling game damage, but costs are justified only for protection of high-value crops over long periods of time. An adequate deer-proof fence must be seven to eight feet tall; it would cost \$8,000 or more per mile. Woven wire fences, which are the most effective, run \$2 per linear foot and last

about 20 years.

Antelope prefer to go under a fence and somehow manage to get through gaps as small as five inches. In Pennsylvania a 7½-foot highway right-of-way fence—with a 5.2-inch gap—was an inadequate deterrent for deer. Overhanging and sloped fences confuse deer and antelope and are more of a psychological than a physical barrier. Sometimes, fields can be protected by just fencing the side which borders a woodland.

Electric fences are effective, but they must be hung to come in contact with the least insulated parts of an animal, such as the ears, nose, face, and forward parts of the legs. However, electric fences require regular monitoring and maintenance—batteries must be changed or charged, insulators checked, and deep snow and vegetation removed to avoid grounding.

Although many operators do not have the luxury of cultural changes, some cultural changes help, such as moving a hay field away from timber cover, or planting an early-maturing crop that can be harvested before the game comes down from the high country. In an irrigated situation, some farmers have cut damage by planting a tall barrier plant such as corn, sunflowers, or safflower along the edge of a crop. Such adjustments are cheaper than fencing and often as effective as repellents.

Repellents include chemicals with strong or discouraging odors, scare devices, and herding. None of these eliminate the problem, but they usually reduce it temporarily.

Although many question their efficacy, some home remedies include moth balls, human hair, creosote, feather or blood meal, and rotten eggs. Some commercial repellents include Repel, Magic Circle, Deeraway, Hinder, Big Game Repellent, Chaperone, and Chew-Not. The effectiveness of repellents depends on the method and time of application, the amount of animal pressure, the length of treatment, and the alternate foods available. Generally, the fresher the repellents, the better; they usually do not deter animals with no alternate food source.

Scare devices—such as fireworks, carbide or acetylene guns, or electric noisemakers—mostly annoy the neighbors. They are most effective when the sounds they make are ir-

regular and they are set with some other deterrent like a fence or repellent.

Attractants include supplemental feeding with hay or pellets or spraying with molasses. The idea is to lure damaging game away from cropland or stored feed. Live trapping and removal is labor intensive and costs about \$100 per deer and \$150 per elk. Both of these are strictly last resort

measures.

Ten states (Colorado, Massachusetts, New Hampshire, Pennsylvania, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming) now pay some compensation for crop damage by game. All of them complain of financial problems, occasional abuse, and headaches in processing claims. Funding comes from hunting license revenue. To qualify for damage funds, landowners in all but Utah had to allow general public hunting on their land. Damage compensation does not prevent damage from occurring, and can be a recurrent drain on limited budgets.

What Has Been Done

During the middle of the last session of the Montana Legislature, the Fish and Game Subcommittee asked the DFWP director for a report on its game damage control activities. The summary surprised even those who work for the outfit.

During the 18½ months from July 1, 1983 through Jan. 15, 1985, the department did more to assist landowners in alleviating game damage than it had ever done in its 85-year history.

Last year, deer and antelope in eastern Montana were at the highest level this century. Elk in western Montana were at the highest level since the 1960s. These animals were not only causing a record amount of damage, but in many areas, they had apparently exceeded the winter range's carrying capacity.

In 1983 and 1984, the hunting seasons, drawing quotas, and bag limits were liberalized, and this year, the number of complaints is down. In 1984, over 103,000 extra deer "B" tags were issued—five times the number in 1982, and triple the 1983 figure. Antelope licenses (43,213) and cow elk permits (15,435) were raised to historic highs.

During the same year and a half, the department received and responded to 710 game damage complaints. Wardens, biologists, and parks workers distributed 1,816 elk panels, 1,574 rolls of snow fence, 682 rolls of four-foot and six-foot field wire, 114 gallons of repellent, 25 scare guns (tried at over 100 sites), more than 300 boxes of fireworks, and 45 tons of blood meal. Several hundred elk and a few deer were also live trapped and

The Interim Study

Last winter during the Montana Legislature, there was considerable discussion about game damage. Several proposals were made to amend game damage policies; there was also discussion about compensation for game damage. The House and Senate finally adopted a joint resolution that requested an interim study of the broad game damage situation. The idea was to pull the facts together and perhaps prepare something for the next Legislature to consider.

The game damage study was only one of 18 different proposals for interim research. Since 18 studies were more than the Legislative Council could handle, the Legislature was asked to prioritize the list. The game damage study received more first-place votes than any other proposal; on the list of 18, it ended up third.

The following legislators were appointed to the interim committee: Senators—Allen Kolstad, Chester; Jack Galt, Martinsdale; Leo Lane, Three Forks; Ted Neuman, Vaughn. Representatives—Tom Asay, Forsyth; Gay Holliday, Roundup; Paul Rapp-Svrcek, Thompson Falls; and Jim Schultz, Lewistown. Andrea Merrill of the Legislative Council was appointed committee researcher and will coordinate the project.

A tentative outline has been developed that, among other things, will examine the legal protections already in place, the extent and nature of current damage, what may constitute excessive and unusual damage, the economic impact of damage, other states' handling of this problem, the feasibility of direct compensation, and alternatives to compensation. The committee hopes to inspect wildlife-damaged areas and to hold public hearings in various parts of the state.

While the Department of Fish, Wildlife and Parks will cooperate in this effort, the Legislative Council will file an independent report next fall. Those wishing to express opinions are welcome to contact: Legislative Council Joint Interim Subcommittee on Agricultural Problems, Capitol Station; Helena, MT 59620.—Mike Aderhold

removed.

Research into new techniques for alleviating game damage also continued. Last year, the department hired biologist Karl Grover to field-evaluate several white-tailed deer damage reduction techniques on three ranches in Carter County. Using long-range night vision equipment borrowed from the National Guard, Grover evaluated the effectiveness of types of electric fences placed around stacked hay, looked at a five-foot plastic snow fence, and checked several placements of blood meal and other repellents.

Effectiveness of the repellents tested varied, and they were not satisfactory in the long term. Fencing was the most effective, but required frequent checking. When working properly, electric fencing was very effective, but was subject to a variety of failures. The whitetails constantly checked the condition of the fence and became more aggressive as their condition deteriorated. Most of the damage was not due to eating, but trampling, spreading, and fouling the stored food. Grover found that both fences and repellents were most effective if placed before deer use had begun, and before deer condition deteriorated.

Where to Go From Here

Fifty-four years ago, Aldo Leopold, one of the pioneers of wildlife management, laid out a goal for working with landowners. In a 1931 report, "Game Survey of the North Central States," he wrote:

Recognize the landholder as the custodian of public game on private lands, protect him from the irresponsible shooter, and compensate him for putting his land in productive condition. Compensate him either publicly or privately, with either cash, service, or protection, for the use of his land and for his labor, on condition that he preserves the game seed and otherwise safeguards the public interest. In short, make game management a partnership enterprise to which the landholder, the sportsman, and the public each contribute appropriate services, and from which each derives appropriate rewards.

We have a long way to go to reach this goal, but the effort is in that direction. In 1982, a department committee was appointed to explore programs to improve the working relationship be-

tween landowners and sportsmen.

The department has scheduled a publication on procedures and techniques to minimize game damage for 1986. The department is also in the process of revising its game damage policy to eliminate excess paper work and make its responses faster and more uniform. There is also discussion about whether a statewide game damage specialist should be appointed to work in the field, or whether the whole field force can be trained to respond to game damage problems.

Game damage funding has always been a problem. The *management* of Montana's big game is completely funded by sportsmen—through hunting license fees and the federal excise taxes on arms and ammunition. However, no excise tax funds are used for game damage. This year's wildlife damage budget is \$179,000, the highest in the department's history. Last year, \$231,000 was spent on game damage, including \$127,000 from a budget amendment and other sources.

Many of the department's programs depend on these same funding sources. General funds are out of the question for game damage, and so is redirecting a major portion of existing funds.

Research and testing of various control techniques will continue. Department experiments in progress are testing the effectiveness of high-output fence chargers used in New Zealand, different formulas for rotten egg repellents, and netting to protect young Christmas trees. The department is also finding out what other states are doing. Most important, the Department of Fish, Wildlife and Parks is taking a much closer look at the causes of game damage, trying to find what situations can be changed and where limited resources can be better applied.

What's Left?

Try as we might, there will always be some game damage situations that will remain problems. Not everyone is reasonable. Sometimes remedies offered by the department are refused. Sometimes people simply do not want to do anything to help themselves, and others are working so hard against nature that they induce depredation faster than the department can alleviate it.

Some land will never be open for

hunting, so right at the beginning, the department cannot use its most effective tool. In their personal efforts to protect a few animals, many well-meaning people have disturbed the delicate and vital balance between an entire population and its environment. In the process, they inhibit the department's effort at reasonable management, create problems for their neighbors, change the natural movement of game in their area, and threaten the wild nature of the resource they feel so strongly about protecting.

Some have made up their minds about what they want from the department. They submit their bills, and they complain when they are not paid. They refuse explanations about the law, legislative and fiscal constraints, control options, and the nature of big game animal behavior and ecology.

They refuse to believe that the Department of Fish, Wildlife and Parks is merely a trustee, and that the wildlife belongs to all Montanans—and that the public has a lot to say about how it is managed. Another allegation is that "Fish 'n' Game" is the only group to benefit from the resource. The fact is: Wildlife-oriented recreation is a \$300 million-a-year industry in Montana. *Every* Montanan benefits, directly or indirectly, from the jobs, salaries, and taxes involved.

Hard cases, tough situations. Small ranches in the midst of thousands of acres of public domain, grain fields in the middle of small private holdings checkerboarded with game cover and hunting closures, tree farms next to wilderness areas planted to exotic fir attractive to wildlife, and valley holdings in eastern Montana that provide the only refuge from the really bad weather that comes every seven or eight years. In these cases, the department could reduce the area's big game by 90% and still not even touch the damage situation.

If the squeaky wheel is going to run a little more quietly this decade, the department is going to need more than reduced big game populations, informed employees, and money. It's going to need a little understanding, patience, willingness to communicate, and some room for compromise.

Your ideas and comments are welcome. Write the Department of Fish, Wildlife and Parks, Wildlife Damage, 1420 E. Sixth; Helena, MT 59620. ■

All this talk about successful hunting seasons simply makes me sick.

How boring.

How uninspired.

How anticlimactic.

Yet the talk has been going on for weeks now, with Tom telling how he drew down on a huge mule deer buck with his bow and arrow, how Dick picked the biggest bull elk from a herd of thousands, and how Harry pulled off a triple on Hungarian partridge with just three shells and an old single-shot .410.

As I look back over my hunting seasons, that kind of story-telling excitement never has meshed with personal reality.

Oh sure, I fill a few tags every year. I even pluck a few feathers. But the boundless excitement, the anxious moments of the sport, and the real thrill of hunting pale in comparison to my post-season activities each fall.

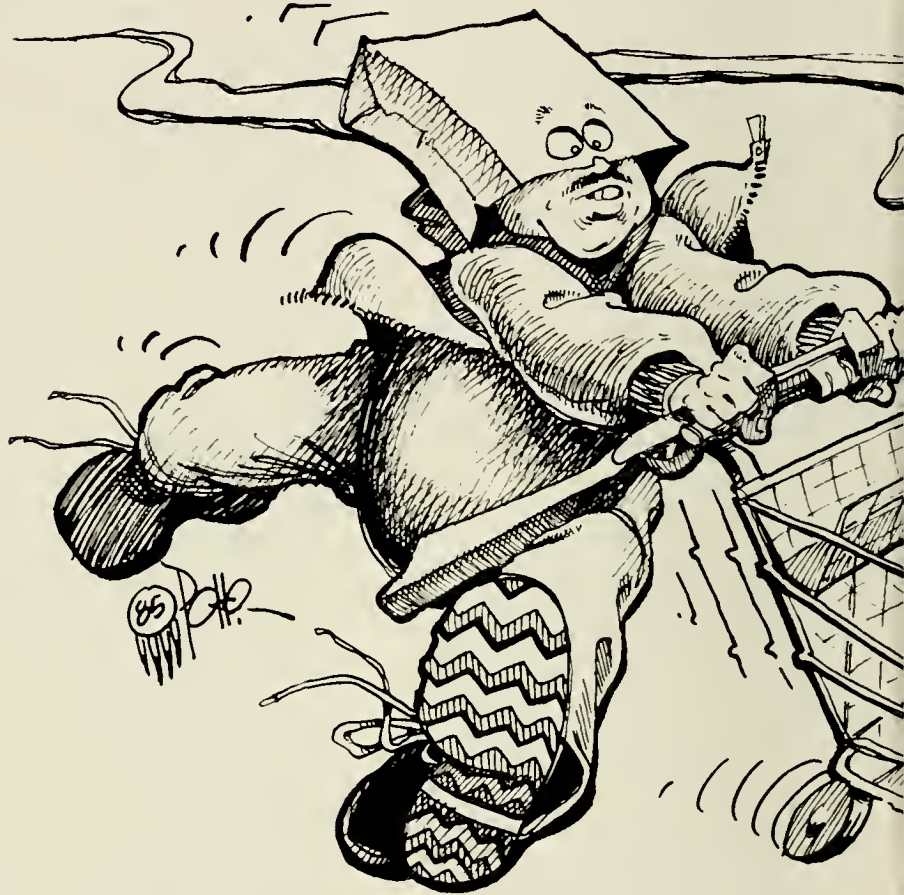
If you want real excitement, try to slip a store-bought turkey past a table full of hunting friends at Thanksgiving—when you promised a year earlier that you'd go out and shoot one this fall. It's in explaining those hunting trips that didn't quite live up to expectations that the true thrills of the sport take place. Believe me, the successful hunts are easy in comparison.

On the other hand, that store-bought turkey could push any hunter to the maximum of his abilities. There's no worry, for example, if a hunter takes to the turkey woods alone and blows a stalk or two, because there are no witnesses. But it takes real stealth to stalk the aisles of a crowded grocery store to reach the freezer section way in the back without friends spotting you, to slip through the checkout undetected, and to sneak through the parking lot to the trunk of your waiting car.

The next step is easy. By propping that big clucker up against a tree, stepping back 40 yards, and unleashing a load or two of No. 4 shot at it, you can install the necessary shot holes. And, of course you can cook up a wild and wonderful story of how that big turkey came to your call, in fall, standing tall, to impress your friends as they gaze in wonder at the bird on the table.

PERSPECTIVE

"Making an Elk Purse Out of a



by Mark Henckel
illustrated by John Potter

Cow's Ear"



Not so easy to explain is how that little pop-up indicator, to herald the bird's doneness, came to be implanted in its breast. Or why there's a half-baked tag hanging from its leg—which you forgot to take off—stating the turkey is a product of Minnesota.

That's when a hunter's true mettle is tested. It's also when quick thinking is in order. You calmly explain this bird is the result of a recent transplant operation bringing birds from Minnesota to Montana to introduce a new subspecies, *Meleagris gallopavo butterballis*, to hunters here. And although he was slightly smaller than the many other 25-pound birds you called in to close range this fall, you thought your guests deserved the best eating available.

Explaining an unfilled moose tag is easier, of course. You simply tell your friends that you were just joking, that you really didn't draw a moose tag after all. That should hold them off right there because none of them ever drew a moose tag either. In fact, I don't think anyone ever really draws a moose tag unless it's during an art project at school assigned by a hunting-oriented teacher who just wants to see if the students have vivid imaginations.

Unfilled elk and deer tags purchased over the counter at license agents are more difficult to explain away. These, too, test a hunter's skills at making an elk purse out of a cow's ear.

The answer here is fairly obvious, however, and comes in the form of good ol' Montana beef.

Many a night has been spent at home over the big game cutting board unwrapping two-pound packages of beef burger and repackaging them in freezer wrap with a label of elk or deer and some phony date on the outside.

For the hunter's own family use, simple repackaging should suffice. When friends ask to check out your level of success, all you have to do is open the freezer and let them see the many stacked and frozen packages. It takes a bit more ingenuity, however, when you have promised to share your good fortune with others.

In that case, I've found it successful to drop a few hairs of the proper

species, plucked from a handy road kill, into the package of burger before freezing. Drop in enough of those loose elk or deer hairs and it's likely you'll never be asked to share the good fortune again, even in the years when lightning strikes twice, the sun and moon come into perfect alignment, the earth's rotation slows for moments, and you actually do score on a buck or bull.

One piece of advice on the steaks and roasts, however: Make sure you check the fat on the outside perimeter of the meat. The blue grade stamp, "Choice," "Good," or, in my budget, "Good and Tough," affixed by the federal inspector at the processing plant can be a dead giveaway that all is not factual in your freezer.

Should that happen, the crafty hunter may have to explain that this animal was trapped and tagged by Fish, Wildlife and Parks and, as a service to those purchasing permits, biologists are now also trained to grade the meat and stamp the carcass of the deer or elk before releasing it back into the wild.

There are other basic guidelines for the unsuccessful hunter to follow: Never try to pass off spring chicken as old sage hen. Never confuse young domestic goat with old mountain goat. Never term Cornish game hen as suckling swan. And never, ever invite a Fish, Wildlife and Parks biologist to dinner.

There's also really no need to get too exotic with your preseason boasting. There's enough excitement in the basic offerings that Montana provides during the general seasons without resorting to special permit drawings, guides and outfitters, or exceeding the limit.

If you don't believe it, just tell a few friends that next year you're going to provide the wild turkey for the Thanksgiving table. That's always been good enough for me to trigger a quick transplant of *Meleagris gallopavo butterballis*. Then, with bogus bird in hand, I can spin a yarn that will beat the sage stuffing out of the tales told by successful hunters who are burdened with the truth to limit their season of fun. ■

